DIR
Texas Department of Information Resources

2014 Biennial Performance Report

ON THE USE OF INFORMATION RESOURCES
TECHNOLOGY BY TEXAS STATE AGENCIES
NOVEMBER 15, 2014

FROM THE STATE'S CHIEF INFORMATION OFFICER

As Texas experiences rapid population and economic growth, state agencies and institutions of higher education continue to deliver more government services with greater enhancements to an increasing number of citizens. Not only is the state improving the information technology (IT) infrastructure that supports its business operations and pursues cost efficiencies, it is also using IT to provide secure and innovative ways for citizens to interact with their government, experience government services at their fingertips, and through open data initiatives, gain insights into how their government works.

However, concerns regarding legacy systems, minimal enterprise collaboration, a diminishing skilled workforce, and unmanaged data have provided opportunities for further innovation in Texas agencies. The Texas Legislature set the course for IT improvements by addressing the need to assess the state's legacy computing systems, and by encouraging innovative priorities such as cloud technology services. As a result, over the past biennium, agencies have a clearer understanding of their hardware and software landscapes, as well as the wide range of options that can be harnessed to meet their technology needs.

As the population, workforce composition, and technology capabilities change, the Texas Department of Information Resources continues to partner with agency and education leaders to evaluate and prioritize the top IT needs of the state. This 2014 Biennial Performance Report assesses agencies' progress within the top ten technology priorities set forth in the 2014-2018 State Strategic Plan for Information Resources Management, and highlights agency accomplishments within these areas over the past biennium.

Texas leadership can be proud of agencies' creative and thoughtful technology solutions, many of which are highlighted within these pages. Still, there are ongoing opportunities to improve the cost-effectiveness and advancement of Texas government programs through carefully managing our IT investments. Therefore, this report also includes recommendations for legislative consideration that will enhance the ability of state government to realize the full benefits of IT.

Agencies have made significant progress statewide through well-conceived and well-executed initiatives built on the principles of secure access to data, fiscal responsibility, and collaboration. By building on these efforts, Texas will continue to make great strides in harnessing technology that advances the business of government and equips the state to better serve its citizens.

Karen W. Robinson

Executive Director, Texas Department of Information Resources
Chief Information Officer, State of Texas

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About the 2014 Biennial Performance Report

This report focuses on progress and challenges in advancing the ten top technology priorities identified in the 2014–2018 State Strategic Plan for Information Resources Management. It also presents recommendations for consideration by the 84th Texas Legislature. Agency performance and accomplishments are highlighted throughout the report. Additional reports, required by statute, addressing progress and achievements in specific technology areas are also included.

The Information Resources Management Act requires the Texas Department of Information Resources to prepare and submit to the Governor and to the Legislature a biennial performance report on the use of information resources technologies by state government (Texas Government Code §2054.055).

Note: For the purposes of this report, the term "state agency" is generally used to indicate a state agency or a state institution of higher education; and the term "technology" is used to indicate "information and communications technologies."

INTRODUCTION

The nature of information technology (IT) is one of rapid advancement and constant change, which makes the role of IT within state government a balancing act between citizen expectations, innovative options, efficiency measures, and budget considerations. The role of IT in the state's overall ability to deliver quality services to citizens continues to grow as the challenge to do more with less has become a business principle for state government.

Agencies have come to view IT as the foundation of service delivery and an efficient way to optimize services while reducing total operating expenses. With increased expectations for IT solutions comes the challenging decisions on how to best prioritize agency and statewide investments in technology.

The State Strategic Plan for Information Resource Management (SSP) lays out ten priorities for state IT efforts and expenditures. The Biennial Performance Report (BPR) details progress made toward those priorities, highlights accomplishments, notes concerns, and makes recommendations to the state legislature for improving the effectiveness and cost efficiency of the state's use of information resources.

Due to the decentralized nature of Texas state government and the resulting agency-centric nature of IT within the state, the priorities are not ranked in numerical order at the statewide level. Each agency must carefully consider the appropriateness of individual priorities in meeting agency goals; still, there are statewide concerns that must be considered:

- **Security and Privacy**, **Network**, and **IT Workforce** capabilities are core to all priorities. They are the "must haves" before any other activity can be considered and will remain priorities for the state for the foreseeable future.

- The remainder of the priorities—**Cloud Services**, **Legacy Moderniza-tion**, **Business Continuity**, **Enterprise Planning and Collaboration**, **Virtualization**, **Data Management**, and **Mobility**—are at various stages of maturity and are important to state agencies in a varying degree based on individual organizational needs.

While this report examines each of the priorities individually, their practical applications are by nature interrelated. For example, *Cloud Services* provide an excellent platform for *Business Continuity* and *Data Management*, and *Mobility* alleviates some *IT Workforce* issues. Agency IT strategic planning, based on business goals, determines additional interdependencies of these priorities in creating solutions for the benefit of Texans.

TOP 10 STATEWIDE TECHNOLOGY PRIORITIES

Security and Privacy

Network

Cloud Services	Legacy Modernization	Business Continuity	Enterprise Planning and Collaboration	Virtualization	Data Management	Mobility

Information Technology Workforce
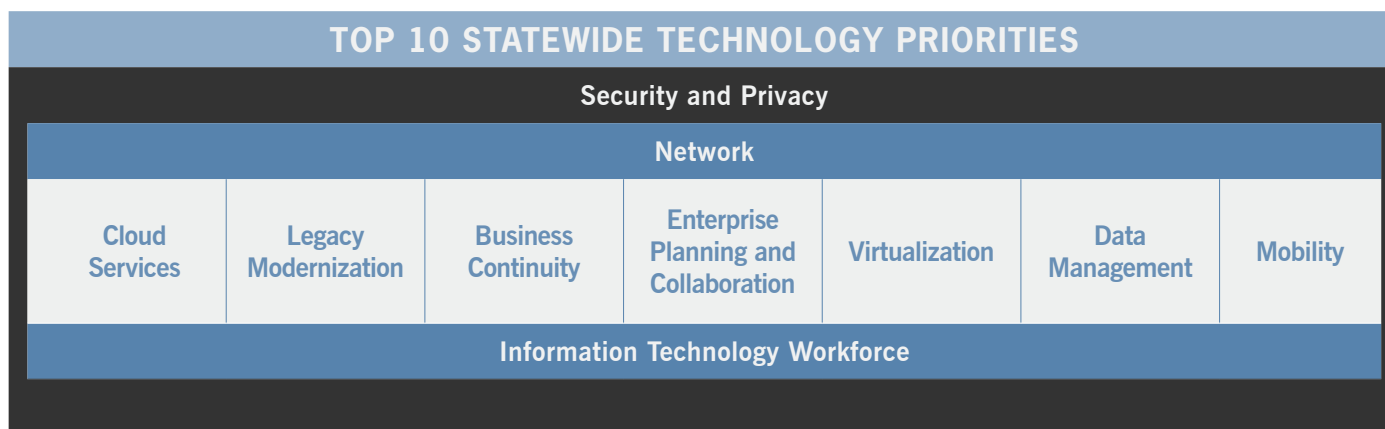
The Texas Department of Information Resources (DIR) has identified rec-ommendations for some of the priorities for legislative changes that could improve the effectiveness and cost efficiency of the state's use of information resources.

The BPR includes reports on State Technology Expenditures, Electronic In-formation Resources Accessibility, Texas.gov, Consolidated Network Security, Telecommunications Performance, Project Management Practices, a summary of Internet-Based Training, and a progress report on IT Financial Data and Governance required by House Bill 3093 (HB 3093) from the 83rd Texas Legislature, Regular Session (83R). These required reports provide in-depth information on statewide IT activities.

The *Report on State Technology Expenditures* highlights statewide IT expen-ditures as a percentage of the overall state budget, which remains relatively constant at approximately 2.5 percent, below national averages for public sec-tor organizations of 3.9 percent. Yet, the IT professionals in state agencies are consistently showing significant growth in service delivery and mission-critical applications with creative approaches that utilize technology more efficiently. Technology has allowed agencies to perform more efficiently and will continue to provide a vehicle for innovative solutions and to meet the growing desire from citizen to experience government services at their fingertips.

LEGISLATIVE RECOMMENDATIONS

The Biennial Performance Report, as required by state law, identifies challenges in advancing the priorities outlined the year prior in the State Strategic Plan for Information Resource Management. Many of these challenges do not require specific legislative action; however, state agencies and institutions of higher education may need additional resources to effectively act on and deploy best practices. Some of the priorities will benefit from legislative action.

Recommendations, based on the findings in this and other DIR legislative reports, are as follows:

LEGACY MODERNIZATION

1. Amend Government Code to authorize DIR to develop a legacy modernization strategy and to collaborate with agencies to use comprehensive strategies, developed as part of the Legacy Systems Study and identified in this report, as guidance in their legacy modernization efforts.

2. Amend Government Code to authorize DIR to build upon the legacy modernization strategy by establishing a statewide application development framework, facilitating standardization and collaboration, and achieving economies of scale by leveraging agency investments.

3. Amend Government Code to authorize DIR to implement a shared (multi-tenant) reporting services and business analytics pilot to determine the viability of a statewide solution.

4. Amend Government Code to authorize DIR to establish a voluntary pilot program that provides statewide application portfolio management practices and toolsets for agencies to implement any recommendations following the Legacy Systems Study.

ENTERPRISE PLANNING AND COLLABORATION

5. Include a rider in the General Appropriations Act to continue the bulk purchasing program at DIR for statewide IT purchases. This program allows agencies to voluntarily participate in a coordinated bulk purchase of standardized equipment to increase quality and value of items purchased.

6. Amend Government Code to expand the DIR cooperative contracts program customer base to include quasi state agencies, such as the Electric Reliability Council of Texas (ERCOT) and the Lower Colorado River Authority (LCRA); private schools and universities; and volunteer fire departments.

7. Amend Government Code to require that IT project plans be submitted to the Quality Assurance Team after a solicitation, but before the agency begins development activities such as design, programming, or testing to ensure proper and more timely planning.

IT WORKFORCE

8. Include a rider in the General Appropriations Act establishing an IT staffing task force that will establish an IT skills academy and create a centralized IT internship program for training and development of state IT workers. Also include an Intern job classification in the General Appropriations Act to address FTE cap burdens that may result from internship programs.

9. Amend Government Code to authorize state agencies, at the discretion of the agency head, to pay certain IT professionals in high-demand positions for compensatory time earned during the course of their employment at their regular hourly salary rate for all or a part of compensatory time worked.

10. Amend Government Code to authorize teleworking for state employees to support agency missions and statewide disaster recovery and business continuity. At the discretion of the agency head and in compliance with agency policy, employees may be authorized to telework if job tasks, productivity, and technology infrastructure at the agency supports participation in telework.

DATA MANAGEMENT

11. Amend Government Code to establish a temporary statewide data coordinator at DIR whose role would be to act as a data steward to improve data governance and integrity and seek opportunities for data sharing across governmental entities that would result in future cost savings.

SECURITY AND PRIVACY

State government transmits, stores, and uses significant amounts of data that must be protected from multiple security threats including loss of confidentiality, integrity, or availability through either malicious or accidental activity. As the steward of personal information for its citizens, the state is responsible for maintaining the privacy of these records.

Citizens entrust the state with their personal information, credit card numbers, and other confidential data with the expectation of secure and private transactions. As the state's citizen-facing services continue to move to online and mobile services models, it is critical that state agencies make the safety and security of state information resources a fundamental management responsibility with the highest level of attention and visibility within each organization.

ASSESSMENT

Information security incidents are increasing and becoming more sophisticated each year, and the public sector continues to be a growing target of cybersecurity attacks.

Symantec's annual study of Internet security threats reported that over 500 million identities across all sectors were breached in 2013, putting at risk personal information including customer credit card information, birth dates, government ID numbers, home addresses, medical records, phone numbers, financial information, email addresses, and details relating to login and password.

Verizon's data breach study concluded that 58 percent of cybersecurity incidents in the public sector are caused by human error or employee actions. About 34 percent of these incidents were caused by accidents in handling data, while 24 percent were caused by unapproved or malicious use of data by public employees
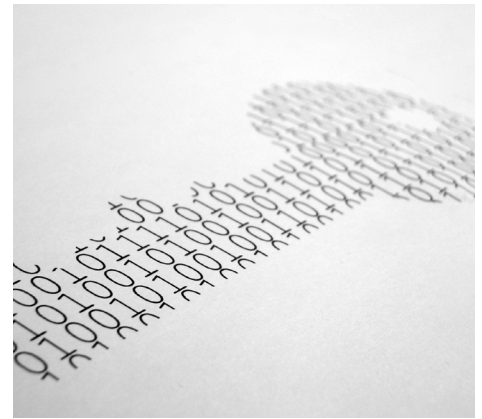
PRIORITY STATEMENT

Develop governance, policies, and guidelines to secure the technology infrastructure, ensure the integrity of online services, and protect the private information collected from citizens and businesses.
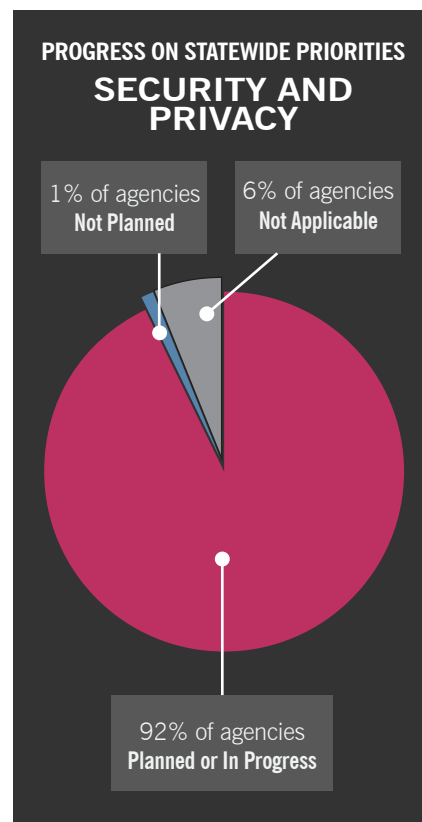
The Ponemon Institute's annual study of data breach costs showed that the average cost for each lost or stolen record containing sensitive or confidential information continues to increase and that the total cost paid by organizations for a major breach increased from $5.4 million in 2012 to $5.9 million in 2013. Ponemon's research discovered that public sector organizations have the highest probability of a breach due to the amount of confidential and sensitive information collected by government. The cost for a public sector entity to mitigate against a security breach is an estimated $172 per record.

The federal government has discovered a number of security incidents involving personally identifiable information, reporting that incidents have doubled over the last few years to 25,000 incidents occurring in 2013. At the state level, major security breaches have had a significant impact on operations and finances. The 2012 hacking of the South Carolina Department of Revenue compromised the personal information of more than three million citizens, and will likely cost the state more than $20 million to fully address the impact of the breach.

The U.S. Department of Homeland Security partnered with the Center for Internet Security's Multi-State Information Sharing Analysis Center, the National Association for State Chief Information Officers, and the National Association of Counties to perform a nationwide cybersecurity review of all 50 states. The top identified concerns of state agencies include the increasing sophistication of threats, and the lack of sufficient funding to support minimum security-related activities. Based on cybersecurity self-assessments, the review found that overall the nation's state and local government maturity posture is not keeping pace with increased cyber threats. In addition the report found that privacy was the least mature control area within the security programs reviewed.

The passage of Senate Bill (SB) 1134 (83R) and SB 1597 (83R) affected how state agencies develop and report their information security plans. SB 1597 requires each agency to submit a security plan to DIR by October 15 of each even-numbered year. SB 1134 requires DIR to develop strategies and a framework for securing cyber infrastructure by state agencies. DIR worked closely with state agency representatives and private-sector reviewers to develop the Texas Cybersecurity Framework that introduces templates to help agencies comply with the requirements.

During the 83rd Texas Legislature SB 1101 and SB 1102 were also passed. The bills extended the role of the Texas Cybersecurity, Education, and Economic Development Council (TCEEDC), and called for DIR to designate a Cybersecurity Coordinator to carry out the recommendations of the TCEEDC.

PROGRESS ON STATEWIDE PRIORITIES
SECURITY AND PRIVACY

1% of agencies
Not Planned

6% of agencies
Not Applicable

92% of agencies
Planned or In Progress

Percentages may not total 100 due to rounding.

ACCOMPLISHMENTS

In Texas, cybersecurity is a shared endeavor. DIR is charged with supporting the state enterprise while agencies are responsible for maintaining security within their own organizations. This continuing collaboration between DIR and state agencies has led to a number of successful initiatives and programs that protect state information assets:

- DIR worked with the **Statewide Information Security Advisory Committee** and its Policy Subcommittee to develop the Texas Cybersecurity Framework, which is an objective-based approach to create and manage the ongoing aspects of the security program within an organization. The Framework consists of 40 distinct objectives and establishes the minimum components of a complete agency security program. It is tied to the five functional areas of the National Institute of Standards and Technology (NIST) Framework for improving Critical Infrastructure Cybersecurity: Identify, Protect, Detect, Respond, and Recover. State agencies utilize the Framework templates to develop the Agency Security Plans required under SB 1597 (83R).

- The **Texas Education Agency** (TEA) has implemented Unique ID as part of the Texas Student Data System (TSDS). Unique ID manages unique identifiers for all students and public education staff across Texas. The system removes the duplication found in a legacy system and offers an alternative to reliance on social security numbers as a primary identifier. TEA received a Best of Texas award from the Center for Digital Government for its efforts to improve student data accuracy and privacy through the TSDS Unique ID system.

- DIR coordinated a statewide security assessment program that conducted comprehensive security and risk management assessments of selected state agencies. To date, 35 state agencies have completed assessments, covering over 91 percent of state employees, representing a significant component of the state's IT operations.

- DIR continues to provide agencies with technical security assessments including Controlled Penetration Testing to evaluate network and systems vulnerabilities, and Web Application Vulnerability Scans that rate web application security, all at no cost to agencies.

- The **Statewide Information Security Advisory Committee** provides guidance to DIR's Statewide Information Security Program. The committee is composed of information security professionals from state and local government, higher education, and private industry.
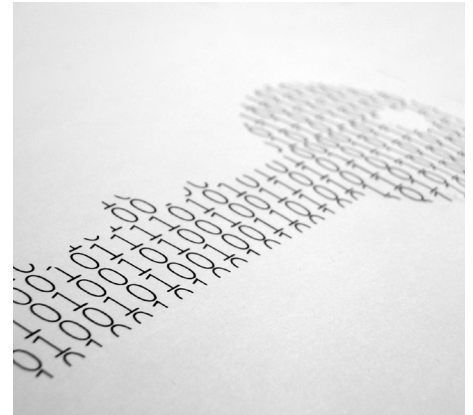
- Through DIR's Office of the Chief Information Security Officer, a Security Education and Certification Program has been developed to help agency Chief Information Security Officers and agency Information Security Officers stay prepared to meet the challenges of an ever-changing cybersecurity environment.

- DIR's Office of General Counsel, collaborating with state agency attorneys who deal with privacy matters, published a template guide to assist state agencies in developing individualized privacy incident response plans. This incident response guide was presented to the State Agency Coordinating Committee Legal Affairs Subcommittee, and to the **University of Texas Center for Identity** Small Business Webinar, and at other state forums. The Incident Response Team Redbook template is available on the Texas Cybersecurity Framework section of the DIR website.

- DIR supports Cyber Texas, an initiative based on recommendations of the **Texas Cybersecurity, Education, and Economic Development Council**. The council's recommendations addressed the state's need to develop a comprehensive Texas cybersecurity strategy; increase the number of cybersecurity professionals within the state; invest in higher education cybersecurity programs; and advance cybersecurity collaboration, innovation, and entrepreneurship. Cyber Texas will focus on education and awareness to produce an exemplary cybersecurity workforce, while developing strategies and solutions to allow Texas to become a national leader in cybersecurity.

CONCERNS

Security and privacy are priorities that extend beyond information technology for both prevention and recovery from security breaches:

- Humans remain the primary vulnerability in ensuring information security within an organization.
- Training for both cybersecurity professionals, as well as non-technical staff, is necessary to decrease the risk of security incidents.
- The state may not be fully prepared for a major security breach, such as occurred in South Carolina, with major financial implications.

LEGISLATIVE RECOMMENDATIONS

At this time, sufficient progress can be made in this area without additional legislative action.

CLOUD SERVICES

Cloud computing is a model of delivering information technology services via a convenient, on-demand network access instead of through an organization's own technology infrastructure. It consists of a variety of "as-a-service" solutions, including infrastructure, platform, software, and broker services on a pay-for-use basis. It is a model built around acquisition of services instead of acquisition of hardware. This approach provides convenient and quick delivery of information, as well as flexibility, efficiency, and cost savings for government. With cloud computing, agencies manage the IT services and data that best fit their business needs rather than managing hardware and infrastructure.

A cloud infrastructure streamlines the way technology is used to deliver services and has revolutionized how state employees access data, software, and collaboration strategies. For decades, government has built infrastructures that do not easily communicate with one another. Using cloud technology, government can deploy solutions and have access to infrastructures without needing to buy expensive hardware. Whether implemented to replace an aging technology infrastructure or to augment computing and capacity needs, cloud service options are being explored and adopted throughout state government as part of an overall IT strategic plan.

ASSESSMENT

Many state and local agencies are moving to cloud models to increase efficiencies and save money. A 2014 Forbes study predicts that 50 percent of all IT will be processed using cloud services within the next five to ten years.

While some Texas agencies have taken advantage of cloud services, much can still be done to realize the benefits. The convenient, on-de-

PRIORITY STATEMENT

Consider and adopt as appropriate, cloud-based software, platform, and infrastructure services to drive cost-effective and efficient operations.

mand delivery of information through cloud services has eased the burden on agency infrastructure and has helped agencies obtain IT capabilities that are flexible, have lower costs, and are quick to implement. Agencies are obtaining computer and software services from third-party hosting services in order to better leverage shared resources. For example, in 2014, at least 30 agencies used the Microsoft Office 365 email offerings, a cloud-based service.

The 2013 Texas Information Resources Deployment Review (IRDR) shows the following results:

- Seventy-four percent of state agencies reported activities related to cloud services were in progress or planned.
- Seventy-one percent stated they have made progress since 2011.
- More than half of state agencies reported that they leverage cloud services for enterprise email and office collaboration solutions.

HB 2422 (83R) encourages Texas agencies to consider cloud computing when making purchases for a major information resources project. By 2014, project managers reported 12 percent of major information resource projects use cloud services.

Texas agencies within the Data Center Services (DCS) program share state-built and -managed IT services, including the DCS community cloud environment. DIR is also working to expand DCS program offerings for software-as-a-service for agencies to use instead of building servers and applications in the data centers.

The Pilot Texas Cloud Offering project allowed DIR and the pilot agencies to gain a greater understanding of cloud infrastructure offerings for state government. The pilot project provided a viable roadmap for future cloud deployments and was instrumental in shaping cloud services procurement.
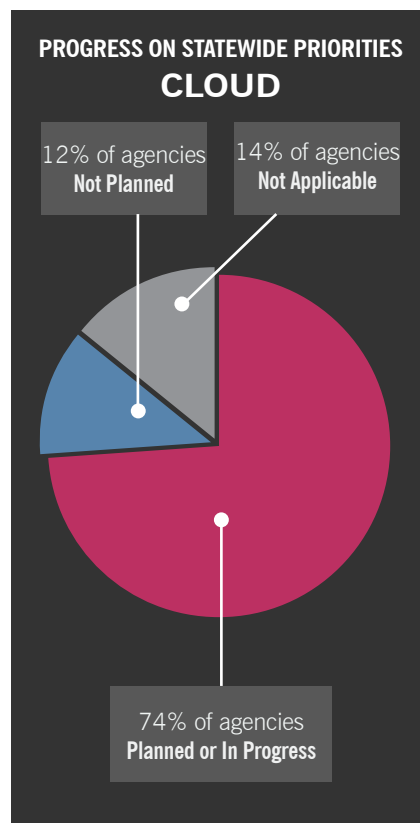
Since the federal government established a Cloud First policy in February 2011, 11 federal agencies have adopted cloud services for business applications, agile infrastructure, social media, email, productivity applications, and website hosting.

ACCOMPLISHMENTS

DIR identified cloud services as a statewide technology priority in 2011 and has since taken the lead in examining cloud-based solutions for state government. Texas agencies are increasingly finding use for the cloud environment that provides rapid deployment, scalable and elastic services, and self-service functions.

- DIR offers multiple cloud solutions, including broker-as-a-service through its cooperative contracts program.

PROGRESS ON STATEWIDE PRIORITIES
CLOUD

12% of agencies
Not Planned

14% of agencies
Not Applicable

74% of agencies
Planned or In Progress

- The DCS program currently offers private cloud functionality in a community cloud for DCS customers. The community cloud is one example of a cloud deployment model that provides access to multiple organizations that have similar interest in collaboration.
- The **Texas Comptroller of Public Accounts** used a cloud-based commerce platform to replace legacy applications architecture with TxSmartBuy2.0. This is the next-generation procurement portal launched in June 2014 to enhance functionality and performance and to increase transparency of government spending on statewide contracts.
- As part of its User Interface IT Improvement Strategy, the **Texas Workforce Commission** revised the unemployment claimant process flows within the Tele-Serv Interactive Voice Response (IVR) and deployed a hosted cloud-based IVR, increasing customer satisfaction and improving Tele-Center call handling.

CONCERNS

While the benefits of cloud services are substantial, there are significant technical requirements that must be addressed to realize those benefits:

- Security is consistently cited by agencies as one of the barriers to adopting cloud services.
- Network upgrades to provide sufficient bandwidth may be required for some agencies as they move to cloud services.
- Financial evaluation of cloud services is necessary to determine both the potential service enhancements as well as the long-term stability in managing IT budgets.
- There is a shortage of skilled workers able to implement a cloud IT strategy.
- Understanding an agency's current IT and application portfolio is necessary before developing a strategy to move to cloud services.
- Moving to the cloud means procuring new IT solutions, and agency procurement cycles and contracts must be modified for the types of IT services offered in the cloud.

LEGISLATIVE RECOMMENDATIONS

At this time, sufficient progress can be made in this area without additional legislative action.

LEGACY MODERNIZATION

A legacy application is a computer program that is based on older and less efficient technology. Modernization of legacy applications—through replacement or extending compatibility with new systems—can be expensive and complex. However, failure to modernize aging legacy applications can potentially compromise mission-critical business and may be more costly as technical support expertise becomes scarce.

HB 2738 (83R) directed DIR to conduct a study to identify legacy systems maintained by state agencies. The study includes

- an inventory of the systems maintained by state agencies;
- the annual cost and availability of resources to maintain the systems;
- the security risks related to the use of the systems;
- if feasible, a cost estimate for updating the systems; and
- a plan for assessing and prioritizing modernization projects to update or replace the systems.

DIR worked with state agency Information Resource Managers to comply with the requirements of this legislation and produced a report and recommendations to the Legislature in October 2014.

ASSESSMENT

The public sector has generally lagged behind the private sector in modernizing outdated systems and applications. Texas is not alone in facing the burden of legacy systems. Some states report critical business applications that are up to 30 years old. The National Association of State Chief Information Officers recognizes the magnitude of this issue and continues to include legacy modernization in its Top 10 Technology Priorities. A 2012 Government Accountability Office report found federal agencies spend about 70 percent of their IT budgets on legacy systems and 30 percent on developing new systems.

Responses from Texas state agencies in the 2013 Information Resources

PRIORITY STATEMENT

Identify existing mission-critical legacy applications and prioritize their replacement or modernization.

Deployment Review indicate that 85 percent of agencies have made progress in the area of legacy modernization over the last two years; however, there remains a substantial amount of work to be done, and 86 percent of agencies have legacy modernization strategies planned or in progress. The Legacy System Study indicates the following findings:
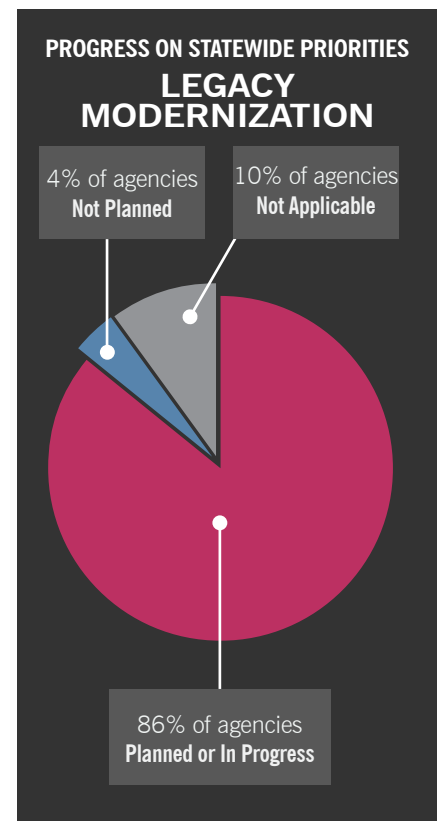
- Over half of the business applications in agency application portfolios are considered legacy.
- Ten percent of legacy applications are identified as duplicate.
- Twenty-five percent of legacy applications have one or more identified security risks; some applications have three or more identified security risks.
- Fifty percent of legacy applications have no planned maintenance investment.
- Eighty percent of legacy applications require specialized skills.

ACCOMPLISHMENTS

Transformation of legacy systems can be difficult; however, agencies that have undertaken modernization of mission-critical systems are seeing significant benefits:

- The **Texas Department of State Health Services** recently completed the Health Registries Improvement Project, replacing approximately a dozen legacy systems used for registering health conditions. The project leveraged both state and federal funding to meet the federal Health Information Technology and Health Information Exchange standards. The initiative emphasized interoperability between agencies and with the federal government. It also maintains a secure, up-to-date, and user-friendly health registry system that helps the state track trends, share data with the federal government, and remain in compliance with health data security laws.

- The **Texas Department of Transportation's** COMPASS project updated the Maintenance Management Information System (MMIS) that had required manual entry of data. Significant tangible and intangible benefits include productivity improvements conservatively estimated at $9.4 million annually, $3.4 million of which is direct labor savings at the maintenance section level. The new maintenance management system
  - improves coordination between construction program units and maintenance managers to reduce unnecessary work;
  - provides tools to maintenance section managers to schedule planned work, enable meeting plans, and eliminate redundant data recording; and
  - provides current, up-to-date information without having to research or access data through multiple sources.

PROGRESS ON STATEWIDE PRIORITIES
LEGACY MODERNIZATION

4% of agencies
Not Planned

10% of agencies
Not Applicable

86% of agencies
Planned or In Progress

- The **Texas Department of Agriculture** (TDA) implemented a software application that would consolidate the administration of ten U.S. Department of Agriculture grant programs. Before consolidation, three legacy systems were used for business processes. The project
  - enhances customer service by automating customer applications and renewals;
  - provides online access to claim information;
  - increases efficiencies for TDA and its customers;
  - reduces overhead by using a single system;
  - improves federal and state required reporting and audit processes;
  - reduces training time for TDA staff and customers; and
  - improves the response rate of information requests.

CONCERNS

The remediation or replacement of legacy systems is often a multi-year endeavor that requires significant time and resources. Technology development can outpace project implementation while changes in federal or state legislation can create challenges for completing modernization efforts within certain budgets and timeframes.

The maintenance of legacy applications remains a challenge due to limited funding, reduced staff resources, and decreasing vendor support. These challenges limit the ability to enhance or revise legacy systems and create obstacles to retaining technical staff to sustain or upgrade aging systems.

Prioritization of replacement and remediation can be complicated by factors including maintenance and replacement costs, business value, security risks, and support.

Agencies should focus on building quality software when developing new applications. The goal should be to develop an elastic IT architecture that grows with business needs.

LEGISLATIVE RECOMMENDATIONS

The four recommendations for this priority reflect those made in the Legacy Systems Study published by DIR in October 2014:

- **Recommendation 1.** Amend Government Code to authorize DIR to develop a legacy modernization strategy and to collaborate with agencies to use comprehensive strategies, developed as part of the Legacy Systems Study and identified in this report, as guidance in their legacy modernization efforts.

- **Recommendation 2.** Amend Government Code to authorize DIR to build upon the legacy modernization strategy by establishing a statewide application development framework, facilitating standardization and collaboration, and achieving economies of scale by leveraging agency investments.

- **Recommendation 3.** Amend Government Code to authorize DIR to implement a shared (multi-tenant) reporting services and business analytics pilot to determine the viability of a statewide solution

- **Recommendation 4.** Amend Government Code to authorize DIR to establish a voluntary pilot program that provides statewide application portfolio management practices and toolsets for agencies to implement any recommendations following the Legacy Systems Study.

BUSINESS CONTINUITY

State government relies on technology to deliver services. The State of Texas must be prepared to ensure critical government operations continue in the face of a disaster or the disruption of services

A business continuity plan identifies critical functions and the personnel, facilities, and other resources required to continuously deliver those functions. A business continuity plan ensures that necessary resources will be available when needed.

State law requires that state agencies prepare continuity of operations plans. In coordination with the **State Office of Risk Management** (SORM), state agency business continuity plans must include detailed information for the resumption of essential functions after an interruption of service. State agencies are also required to maintain a written business continuity plan that specifically addresses the information resources required to resume mission-critical functions.

PRIORITY STATEMENT

Ensure that critical government information technology services continue in the event of a disaster or a disruption of normal operations.

ASSESSMENT

Business continuity readiness and planning is a top priority of state government as reported by the National Association of State Chief Information Officers. In the private sector, enhancing and protecting the value of the company through IT risk management and business continuity is also a top priority. The costs and consequences of unplanned outages can be significant. The Ponemon Institute, for example, has estimated the cost of an outage at a public sector data center to approach $500,000 due to business disruption and the resulting lost productivity and recovery costs.

Business continuity planning is particularly important in Texas, which is historically listed as among the states most at risk for natural disasters.

Reports from the 2013 Texas Information Resources Deployment Review show that a majority of agencies consider the importance of information resources in developing business continuity plans:

- Ninety-nine percent of agencies include a written disaster recovery plan for information resources in support of their business continuity plan.
- Fifty-four percent of agencies consider both business continuity and disaster recovery to be among their top five security initiatives over the past biennium.
- Forty-four percent of agencies include work at home or alternative workplace options in their business continuity plans. This can have a significant impact on information resource planning to support these work options.

State law requires agencies to work with SORM to develop an agency level business continuity plan that outlines procedures to keep the agency operational in case of disruptions to production, finance, administration, or other essential operations. According to SORM, only 48 percent of agencies acknowledge testing their business continuity plans during 2011–2012. Industry best practices suggest the need for an annual test to validate plans, however, only 32 percent of agencies reported they conducted annual testing of their plans.
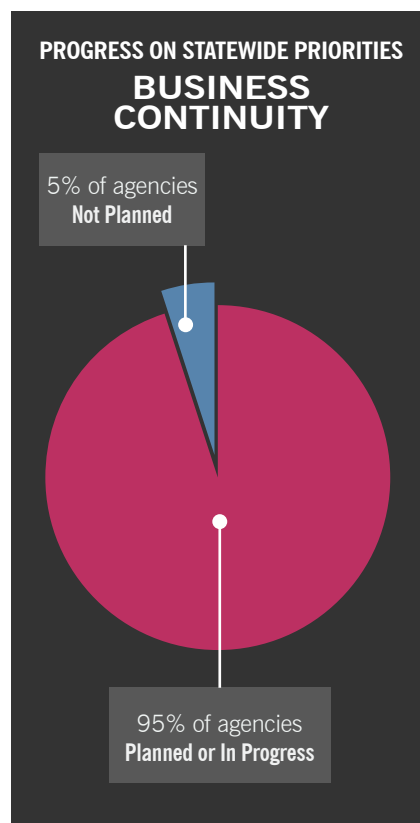
The federal government launched, in 2012 after Hurricane Sandy, the White House Innovation for Disaster Response and Recovery Initiative to discover effective ways technology can empower survivors, first responders, and local, state, and the federal government with critical information and resources. The initiative highlights the efforts of federal agencies and the tools and services they offer, along with tools and applications available from non-profits and the private sector that may be used following a disaster.

ACCOMPLISHMENTS

To assist Texas state agencies in developing comprehensive business continuity plans, **SORM**, the **Texas Office of Homeland Security**, the **Texas Division of Emergency Management**, and the Texas Department of Information Resources developed tools to assist agencies in the risk management planning process:

- The Texas Essential Functions represent a list of eight primary responsibilities of state government and leadership during and after a major emergency. The essential functions are supported by government services and correlate with the National Essential Functions.

- The Texas State Agency Business Continuity Planning Policy Guidance document highlights the state and federal policies that direct agencies how to develop business continuity plans as well as the

PROGRESS ON STATEWIDE PRIORITIES
BUSINESS CONTINUITY

5% of agencies
Not Planned

95% of agencies
Planned or In Progress

Texas essential functions required when developing their plans.

- The Texas Continuity Planning Crosswalk serves as a guide to business continuity plan requirements for state agencies and the standard by which SORM will evaluate agency business continuity plans. The crosswalk incorporates the Federal Emergency Management Agency Continuity Assistance Tool and Key Elements of Departmental Pandemic Influenza Operational Plans. It also incorporates state laws.
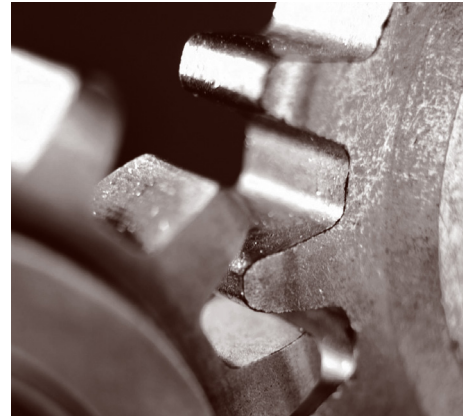
CONCERNS

Business continuity planning is developed by each individual agency without recognizing essential business relationships and inter-agency relationships regarding IT infrastructure. Enterprise services across agencies should receive priority in restoration to ensure essential state services delivery systems continue to function. These include Data Center Services, TEX-AN telecommunication services, the Capitol Complex Telephone System, as well as the Centralized Accounting Payroll/Personnel System and other accounting systems.

Not all agencies consistently test business continuity plans to determine effectiveness. SORM and DIR should collaborate to ensure risk assessment requirements for Security and Business Continuity Plans for continuing operations are functionally compatible and non-duplicative.

LEGISLATIVE RECOMMENDATIONS

At this time, sufficient progress can be made in this area without additional legislative action.

ENTERPRISE PLANNING AND COLLABORATION

Enterprise planning and collaboration refers to the business or enterprise units within an agency working with other divisions to create a more cohesive approach to using technology to solve business problems. The result is processes that enable groups to work together on common issues, facilitating cooperation between programs within a single state agency, or between agencies.

While Texas state government is decentralized, there are many opportunities for agencies to collaborate to better meet constituent needs, with technology enabling this cooperation. Combining efforts on an enterprise level can lead to a single point of access to related government programs, for the benefit of like customers. A prime example is Texas.gov, the state's web portal, where entrepreneurs can access all needed government permits to start a new business and citizens can access an array of services and records in one location.
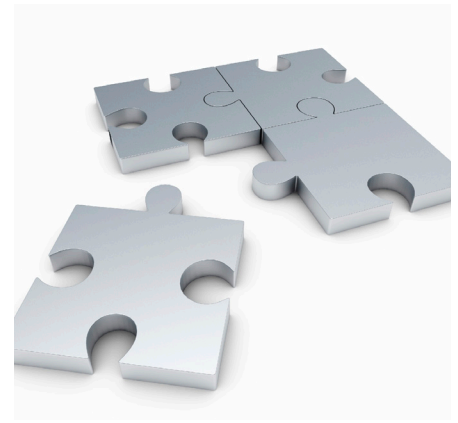
Agency enterprise planning and collaboration is effective in connecting divisions who could benefit from shared services and bridging IT divisions with executive leadership.

Whether breaking down internal program silos or working with other state agencies to meet the needs of multiple enterprises, collaboration affects the degree to which the state can improve its return on IT investments.

PRIORITY STATEMENT

Enhance statewide efficiencies through improved planning and collaboration among and within agencies.

ASSESSMENT

The goal of enterprise planning and collaboration is to enable agencies to better manage government spending and operate essential programs and services. The governance structure of IT in Texas is uncommon compared with other states, as agencies have relative autonomy over decisions and procedures relating to information resources. Unlike other states which may have a central IT agency, DIR provides guidance to agencies through rules, policies, guidelines, and strategic tools that help agencies plan and manage IT projects.

A number of recently available tools have helped agencies plan for enterprise collaboration and improved communication:
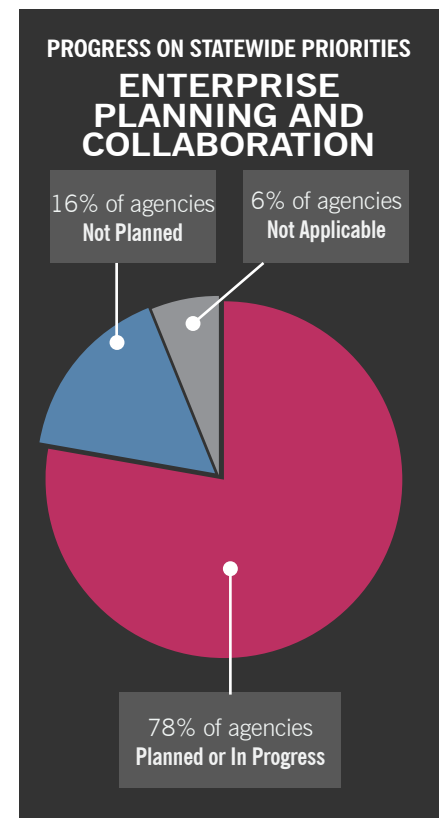
- **Content management tools**, such as content repositories and version control software, allow employees to collaborate on, edit, and share documents and files.
- **Real-time communication tools** enable on-demand workplace communication, such as instant messaging, videoconferencing, and Voice over Internet Protocol (VoIP) telephony.
- **Community collaboration tools** allow teams to virtually come together and share ideas on projects. Examples include team portals, discussion boards, and surveys.
- **Social collaboration tools** provide employee-centric social collaboration through agency-specific profiles on social media such as Yammer or Chatter as well Twitter, Facebook, and YouTube.

Responses to the 2013 Information Resources Deployment Review indicate the following:

- Ninety-one percent of agencies have cited some form of technology collaboration with other agencies, institutions of higher education, or local governments.
- Seventy-eight percent of agencies stated that their agency has current or planned activities which are aligned with, or related to, enterprise planning and collaboration.
- Forty-nine percent of agencies cited examples of sharing data with one or more other government entities for collaborative initiatives.
- Forty-four percent of agencies stated that they use social media to share relevant information from or with other government entities.

As the technology agency for the state, DIR provides opportunities, tools, and resources that enable cross-jurisdictional collaborative planning:

- The Texas Project Delivery Framework consists of project management templates which facilitate communication among different divisions within an agency and senior management. The Framework allows agencies to monitor major information resource projects more effectively and ensures that IT projects support business needs.
- The DIR cooperative contracts program offers procurement tools and contract initiatives to enhance collaboration.
- IT leadership collaboration forums sponsored by DIR provide the venue for starting the conversation about possibilities.

PROGRESS ON STATEWIDE PRIORITIES
ENTERPRISE PLANNING AND COLLABORATION

16% of agencies **Not Planned**

6% of agencies **Not Applicable**

78% of agencies **Planned or In Progress**

🏆 ACCOMPLISHMENTS

Texas citizens and agencies have benefitted from enterprise collaboration between state agencies:

- The **Texas Health and Human Services Commission** (HHSC) has a well-established and integrated Commission-wide resource—211 Texas—that helps citizens connect with the services available under the HHSC umbrella. Through enterprise collaboration with the **Texas Department of Housing and Community Affairs**, that agency's "Help for Texans" housing assistance provider data is now part of the valuable information available on 211 Texas.

- The **Comptroller of Public Accounts** (Comptroller) collects state taxes and must keep accurate data related to taxpayer contacts and responsibilities. Data sharing between the Comptroller and a number of state agencies ensures that the latest information is available. Shared data files include
  - child support information from the **Office of the Attorney General**;
  - corporate officer, director, and new entity charter information from the **Office of the Texas Secretary of State**;
  - crude oil and natural gas lease and well information from **Railroad Commission of Texas**; and
  - internal fuels tax licensee information from the **Texas Department of Transportation**.

- The Office of Information Technology at **The University of Texas at Arlington** (UTA), in collaboration with IT personnel, outside contractors, and the University Academic Advising Committee, released the Central Advising Record (CAR) system, a communication tool for advisors. This system allows advisors across campus to communicate and send referrals to other colleges within the university. Before the CAR system was implemented, advisors created a new record every time a student changed their degree plan from college to college. Now student-advising records are available for the course of the students' enrollment at UTA regardless of their degree plan. With enterprise-wide planning and collaboration, the Office of Information Technology has been able to reduce labor costs, eliminate redundant applications and licensing costs, improve campus relationships, focus resources to move the project forward, and provide a refined advising process. Within the first two months, the CAR system received 8,000 notes and the advisors saw more than 10,000 students using the system to document comments, send referrals, and communicate with multiple locations.

CONCERNS

Because Texas IT governance structure is decentralized, silos among and within agencies can pose challenges to effective collaboration and planning. One agency may be unaware of IT projects that have proven to be useful and successful for other agencies.

Agency IT divisions are sometimes divided into various, device-specific administrators (applications, servers, network, and storage). This device-specific system administration provides a narrow focus on only one facet of an IT infrastructure. Without a holistic and unbiased view of the IT environment, managing IT project performance may be difficult. Breaking down silos within an agency will foster more effective management of IT projects if IT departments and business management work in tandem.

Often, collaboration tools are not implemented in a systematic way or according to a carefully planned strategy. It becomes very difficult to manage an agency's data when it is exists in multiple tools across the enterprise. For example, file version control can be problematic in collaboration, especially as more employees become involved.

Opportunities are available, on a voluntary basis, to expand collaboration in beneficial ways through statewide contracting and IT project management. Legislative support has encouraged participation in these types of voluntary programs.

LEGISLATIVE RECOMMENDATIONS

- **Recommendation 5.** Include a rider in the General Appropriations Act to continue the bulk purchasing program at DIR for statewide IT purchases. This program allows agencies to voluntarily participate in a coordinated bulk purchase of standardized equipment to increase quality and value of items purchased.

- **Recommendation 6.** Amend Government Code to expand the DIR cooperative contracts program customer base to include quasi state agencies, such as the **Electric Reliability Council of Texas** (ERCOT) and the **Lower Colorado River Authority** (LCRA); private schools and private universities; and volunteer fire departments.

- **Recommendation 7.** Amend Government Code to require that IT project plans be submitted to the Quality Assurance Team after a solicitation but before the agency begins development activities such as design, programming, or testing to ensure proper and more timely planning.

IT WORKFORCE

One of the greatest challenges faced by state agency leadership continues to be recruiting, retaining, and training a qualified IT workforce. IT professionals play a vital role in mission-critical decisions and effective service delivery. They have a direct impact on agency operations and overall success. A strategic focus on building and maintaining a skilled and efficient IT workforce is essential to organizational success.

A large number of pending retirements, competition from the private sector for skilled employees, and the need to keep up with fast-paced technological developments, are challenges facing the state's IT workforce. It is critical to strategically maximize organizational performance through short- and long-term IT recruitment and retention tactics.

PRIORITY STATEMENT

Develop and implement strategies to recruit, retain, and manage a fully trained and qualified IT workforce to meet current and future mission objectives.

ASSESSMENT

In Texas state government, total employment has been on the decline in recent years as budgets are limited and agencies are challenged to do more with less. Since 2001, the total number of state employees has decreased by approximately three percent, while the number of state IT employees has decreased by about 10 percent.

Outsourcing, job restructuring, and new technologies allow state agencies to run effectively with fewer IT staff members. For example, in 2013, the Texas Department of Transportation outsourced its information technology operations to a global IT services provider, NTT Data. Nevertheless, the retention of institutional knowledge, strong contract management, and strategic IT planning and implementation require agencies to recruit and retain a skilled IT staff.

In general, the turnover of IT positions has been significantly less than the total turnover rate for the state. IT turnover averages slightly less than 10 percent while all other job classifications' turnover rates average at 16 percent. This may indicate that agency IT staff retention strategies are working or may simply reflect a weak job outlook for IT professionals during the recent recession. In either case, strategic retention tactics con-
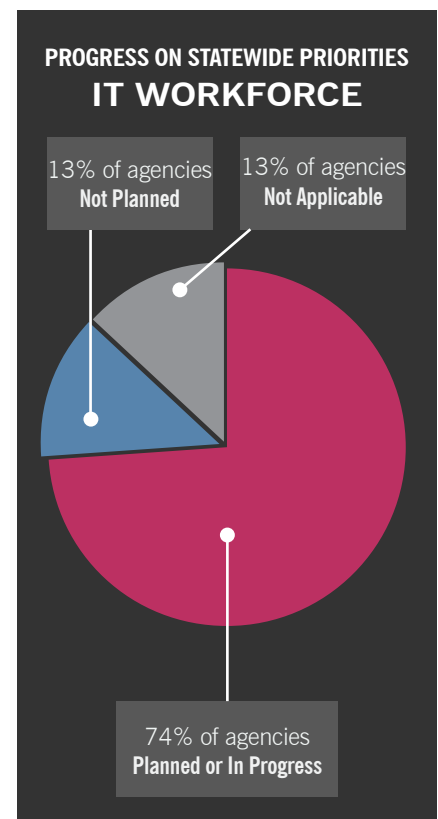
tinue to be a concern for state agencies.

A large number of state IT employees have reached or are reaching retirement eligibility. While these retirements will not all come at once, and one-to-one replacements may not be necessary as job duties are redefined, state agencies must be prepared for this talent loss.

A low statewide unemployment rate of 5.1 percent adds to the staffing challenges. Now at the lowest point since September 2008, this rate indicates a strong job market for those seeking employment and a tightening market for employers. In addition, state compensation packages have been less attractive to younger workers looking for short-term income, further complicating the matter.

Texas is not alone in this struggle. There are initiatives at the national and state levels that focus on developing a top-tier IT workforce:

- Tennessee's Next Generation IT Initiative focuses on meeting future staffing needs by increasing its talent pool through investment in technical, communications, and leadership training. One strategy is partnering with state colleges and universities to gain access to the emerging workforce. Also included in the initiative is a complete reexamination of state IT job classifications to better reflect current duties and technologies. Finally, the state dedicated $2.5 million to establish a training academy for IT professionals.

- California's IT strategic plan stresses workforce initiatives through analysis of current and future skills needed, development of employee capabilities to fill key critical positions, sharing best practices, and establishing a project academy for IT staff at various levels.

- At the federal level, the Government Accountability Office recently examined the issue of attracting and retaining skilled IT professionals in federal agencies. The study recommended
  - a knowledge and skills assessment of IT positions needed to support organizational missions and goals;
  - a gap analysis of current IT staff knowledge, skills, and abilities;
  - the development of strategies for hiring, training, and professional development to fill the identified gaps; and
  - an evaluation of implemented programs to be used in continuous improvement efforts toward the goal.

PROGRESS ON STATEWIDE PRIORITIES
IT WORKFORCE

13% of agencies
Not Planned

13% of agencies
Not Applicable

74% of agencies
Planned or In Progress

ACCOMPLISHMENTS

Texas state agencies have initiated a number of strategies to recruit and retain a skilled IT staff:

- The **Health and Human Services Commission** is in the process of addressing several IT workforce issues in their Recruitment and Retention Initiative. The goals of this initiative include attracting the best and brightest job candidates, reducing the number of days to fill vacancies and turnover rate, and increasing job satisfaction of IT employees. Specific metrics have been developed to assess progress towards meeting goals. HHSC plans to conduct a benchmarking analysis of certain IT job classification positions, and then develop defined career ladders for major IT job classifications. Furthermore, HHSC plans to use the current authority to request approval from the Comptroller of Public Accounts to offer recruitment and retention bonuses to certain IT staff. Additional recruitment and retention strategies to be implemented include increasing the number of IT staff who telework, enhancing training programs for IT staff, a summer internship program for college students or recent graduates, and partnering with universities to attract computer and information science majors.

- The **Texas Commission on Environmental Quality** (TCEQ) developed the Transitions Hiring Program, which provides guidance and mentoring for recent college graduates entering the workforce for the first time. Participants get valuable knowledge while TCEQ develops a pool of candidates for entry-level positions.

- The **Texas Department of Public Safety** creates an annual technology staff augmentation plan that aligns with current and planned projects. The plan allows for the proactive identification of skills, knowledge, and resources needed to implement technology solutions. The blend of staff augmentation and internal IT staff provides the agility required to meet the demands of new technology while supporting mature technologies.

- The **Harris County** Information Technology Center has multiple initiatives to recruit and retain a skilled IT workforce. Recent initiatives include a mentorship program for staff interested in a variety of IT occupations, a revitalized reward program to develop a pay-for-performance culture, a formal compensation analysis to ensure financial rewards are correctly tied to performance, and a major overhaul of job classifications to better reflect the current needs of the county.

- The **Texas Education Agency** conducted the Information Technology Services/Statewide Education Data Systems Salary Parity Study that allowed the agency to focus on identified recruitment and retention issues. Addressing recruitment and retention challenges based on the results of this study will save the agency the time and costs that are incurred with staff turnover. Recruiting highly skilled individuals and retaining current staff will aide in retaining valuable instructional knowledge that is critical to the consistency and continuity of business operations.

- The **Department of Aging and Disabilities Services** (DADS) IT Knowledge Transfer Plan (KT Plan) enables IT employees to document mission-critical knowledge to ensure current and future support of agency technology needs. The annual KT Plan deepens IT employee knowledge and expertise so that multiple employees have expert-level skills in any application and in emerging tools and technologies, thereby reducing dependency on contractors. The planned development of essential documentation built into the KT Plan facilitates backup activities and new hire training.

CONCERNS

Two major concerns continue to impact efforts to recruit and retain a skilled IT workforce:

- Large numbers of workers eligible for retirement can result in a loss of experience and knowledge. As baby boomers (ages 50 to 68) approach retirement, there is concern that they will take a large amount of institutional knowledge, valued experience, and rare skill sets with them when they retire. Within the state IT workforce, about 47 percent of employees are 50 years or older and only 20 percent are under the age of 40. While not all employees qualified for retirement will elect to leave the workforce, planning for the impending wave of retirees over the next decade is important to retain critical knowledge and skills.

- Competition with the private sector for talented IT workforce professionals is fierce due to the large number of private sector technology companies that call Texas home. State compensation remains competitive in the long term, but falls short in the near term. Lower salary ranges, and benefits that become truly valuable closer to retirement, cannot compete with private employers. Job security that was often associated with state employment no longer plays into perceived or actual benefits. Agencies must seek out and implement creative solutions that attract talent to state IT departments.

LEGISLATIVE RECOMMENDATIONS

- **Recommendation 8.** Include a rider in the General Appropriations Act establishing an IT staffing task force that will establish an IT skills academy and create a centralized IT internship program for training and development of state IT workers. Also include an Intern job classification in the General Appropriations Act to address FTE cap burdens that may result from internship programs.

- **Recommendation 9.** Amend Government Code to authorize state agencies, at the discretion of the agency head, to pay certain IT professionals in high-demand positions for compensatory time earned during the course of their employment at their regular hourly salary rate for all or a part of compensatory time worked.

- **Recommendation 10.** Amend Government Code to authorize teleworking for state employees to support agency missions and statewide disaster recovery and business continuity. At the discretion of the agency head and in compliance with agency policy, employees may be authorized to telework if job tasks, productivity, and technology infrastructure at the agency supports participation in telework.

VIRTUALIZATION

Virtualization refers to the creation of logical rather than physical versions of resources like servers, storage, and desktop environments. Traditionally, one would procure a server or desktop and install the operating system and applications directly onto the hardware. With virtualization, the operating system and applications are separated from the underlying physical device, allowing for more efficient use of the device.

This state technology priority focuses on two types of virtualization: *server virtualization*, in which a single physical server hosts multiple virtualized machines; and *desktop virtualization*, in which the desktop environment is no longer hosted physically on the machine, but instead resides on a remote server and is sent to users via the network.

PRIORITY STATEMENT

Virtualize existing server and desktop environments to reduce operational costs and improve service delivery.

ASSESSMENT

Virtualization delivers many benefits, including generating significant cost savings:

- Capital expenditure savings. As fewer servers and server licenses need to be purchased, hosting multiple virtual machines on a single server uses existing space more efficiently than traditional physical servers.
- Operations savings. As the automation enabled by virtualization means less time spent by information resources staff on administering and managing assets.
- Energy savings. As virtualization also eliminates the need to pay for powering extra servers, the office space used to house them, and the climate control systems used to cool these servers.

In addition to cost savings, virtualization improves the quality of technology service by strengthening disaster recovery capabilities, supporting transition to a cloud infrastructure, simplifying the deployment of mobile devices, streamlining management of information technology assets, and greatly enhancing security.

Many agencies have recognized these benefits and moved to virtualize core aspects of their systems, as responses to the 2013 Information Resources Deployment Review show:

- Seventy-eight percent of agencies indicated that desktop, storage, or server virtualization was planned or in progress.
- Seventy-three percent have deployed virtualized servers.
- Virtualized servers make up 63 percent of all server instances in the state.
- Five percent of agencies actively deploy desktop virtualization.
- Fifty-five percent have no plan to adopt desktop virtualization.

ACCOMPLISHMENTS

- The Data Center Services (DCS) program at the **Department of Information Resources**, currently serving 29 agencies, continues to virtualize its servers. DCS has increased the percentage of virtualized servers from 46 percent as of July 2013, to 54 percent in August 2014, and intends to achieve 70 percent server virtualization by October 2015.
- The **Texas Medical Board** (TMB) completed an infrastructure investment project this past biennium resulting in the virtualization of 80 percent of all TMB servers. These upgrades increased TMB's capacity for high-quality service delivery and generated significant cost savings.
- In coordination with the statewide DCS vendor, the **Department of Aging and Disability Services** (DADS) is investing in new, cost-effective technology that will enhance workforce productivity. A pilot that will allow DADS to host desktops virtually from the DCS environment is being conducted to demonstrate the value of virtual desktop infrastructure. Eventually, dependent on pilot results, 10,000 virtual desktops will replace PCs, allowing DADS to issue mobile devices with a secure and flexible virtual desktop environments to health professionals working in state supported living centers.
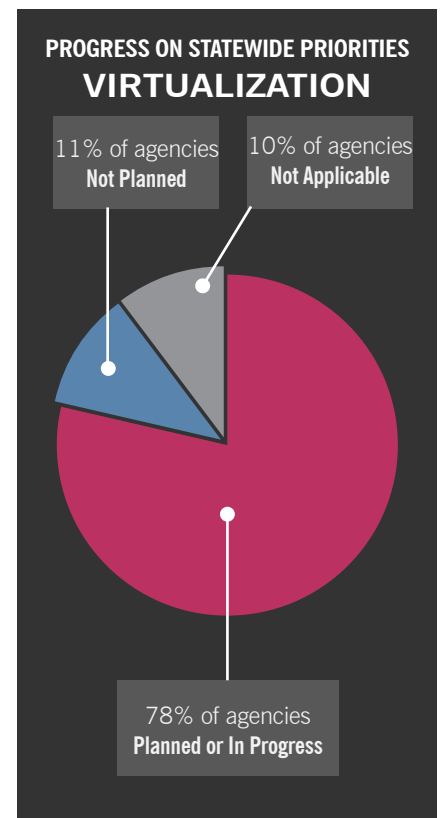
CONCERNS

Virtualization may provide strong computing and budget benefits; however, there are several concerns related to this priority:

- Low adoption rates of desktop virtualization among state agencies and the lack of planned implementation minimize benefits such as secure desktop environments and technological flexibility for agency employees.

- Virtualization technology can carry a relatively higher upfront cost, including staff training, which discourages immediate adoption. However, the long-term return on investment can ultimately outweigh the upfront costs of adoption.

LEGISLATIVE RECOMMENDATIONS

At this time, sufficient progress can be made in this area without additional legislative action.

PROGRESS ON STATEWIDE PRIORITIES
VIRTUALIZATION

11% of agencies
Not Planned

10% of agencies
Not Applicable

78% of agencies
Planned or In Progress

DATA MANAGEMENT

Public and private sector organizations continue to produce and accumulate large quantities of data. Data will continue to exist after applications become outdated, therefore data management will continue to be important as business and IT processes change. Data governance is essential to ensuring that data is accurate, appropriately shared, and protected.

The rapid proliferation of data and the program and legal requirements to retain, manage, and protect it create significant costs and challenges for state business and information technology leaders. Data must be effectively managed to enhance its value and usefulness for decision makers. Sound data management principles require good stewardship and a focus on integrity. Successful organizations treat data as an asset and manage, protect, and secure it accordingly.

Integration of data across various systems within an organization increases its value. It fosters data accuracy and uniformity, and demonstrates an understanding of institutional complexity. Using a thoughtful approach to access and use of available data enhances an organization's decision-making ability.

Additionally, regulatory requirements such as those specified by the Health Insurance Portability and Accountability Act and the FBI's Criminal Justice Information Services demand data management be a priority.

Organizations that use established practices to control cost by managing storage, retention, and archiving will reduce costs that occur when data is unnecessarily duplicated or stored.

PRIORITY STATEMENT

Implement sound data management principles to support good business practices, meet regulatory requirements, and reduce costs.

ASSESSMENT

Responses to the 2013 Information Resources Deployment Review indicate that Texas state agencies are addressing data management as a priority:

- Almost 90 percent of state agencies are making data management a priority.
- Eighty-eight percent of agencies are either working on or planning for data management systems.
- Twelve percent acknowledge the need for data management, but are not planning to implement one in 2014–15 biennium.
- Fifty-four percent indicated data protection is a primary focus among agency security initiatives.

An effective data management plan requires agencies to understand the following:

- What is the quantity and purpose of data?
- Will it grow over time and at what rate?
- How should it be controlled and stored, and for how long?
- What privacy requirements exist for the data?

Good data management creates new opportunities for governments to strengthen services to citizens and improve operations. Effective data management and the business intelligence that results enhances decision making and customer service. Data management and data governance are increasingly important as organizations consider opportunities for data sharing, open data, and large and complex "big data."

Data management ties directly to storage costs that increase as the data stored proliferates. IT is simply the custodian of data that belongs to agency business units. Without strong commitment by agency leadership, the best that can be expected is continued growth in data and storage costs. Ideally, leadership and business owners associate value to data and create policies and procedures to determine data retention tiers and safe deletion.
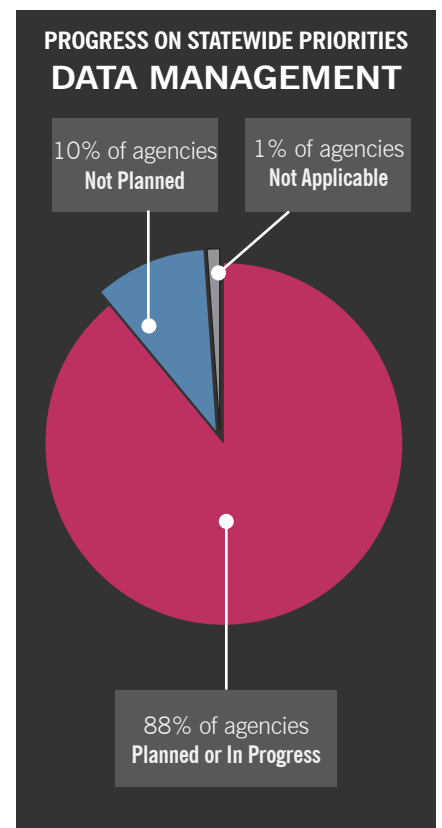
Organizations are exploring how to deploy data management in the cloud. There is interest in data management and storage "as a service" to drive new, distributed data management optimization technology and support analytics in the cloud.

🏆 ACCOMPLISHMENTS

Numerous large state agencies have successfully incorporated data management into IT strategy as new applications are developed:

- The **Texas Department of Public Safety** enhanced TXMAP, its geospatial application, by adding functionality, automation, and additional data layers. TXMAP provides law enforcement with a quick and understandable common operating picture of important

PROGRESS ON STATEWIDE PRIORITIES
DATA MANAGEMENT

10% of agencies **Not Planned**

1% of agencies **Not Applicable**

88% of agencies **Planned or In Progress**

Percentages may not total 100 due to rounding.

data in a map format. The system facilitates rapid identification of spatial patterns.

- The **Texas Education Agency** indicates that the continued implementation of the Texas Student Data System streamlines school district data collection and submission processes and equips educators with timely and actionable student data, driving classroom and student success while ensuring the security and privacy of data for more than 5.1 million students.

- The **Texas Workforce Commission** Unemployment Insurance IT Improvement Strategy includes a group of IT projects that will address modernization needs in the Unemployment Insurance program. It brings data together from three systems—Tax Modernization, Improve Discovery of Fraud, and Improve Benefits System Interface—to improve program processes and customer service.

- **Texas.gov**, in partnership with a small group of state agencies, is piloting an open data portal—data.texas.gov—that will allow customers, vendors, and the public to obtain data in a self-service manner rather than through an open records request.

CONCERNS

Data management is an ever-growing need that state agencies must address before usefulness of data and data integrity begin to dissipate:

- Without a data management plan, data quality—the accuracy and consistency of data— diminishes, and the challenge of making good business decisions based on relevant information becomes increasingly more difficult. The ability to manage the ever-increasing data becomes an expensive and less achievable goal.

- Data has less value without data integrity, or the assurance that data is complete and accurate through checking and validation methods. As funding is available, agencies will seek opportunities to implement advancements in securing government data and systems that agency business leaders can use to achieve efficiencies.

LEGISLATIVE RECOMMENDATION

Recommendation 11. Amend Government Code to establish a temporary statewide data coordinator at DIR whose role would be to act as a data steward to improve data governance and integrity and seek opportunities for data sharing across governmental entities that would result in future cost savings.

MOBILITY

Widespread adoption of mobile devices like smartphones and tablets has changed the way Texans expect to access the services provided by state government and how state employees engage with the workplace. This strategic technology priority focuses on two types of mobile strategies adopted by agencies:

- **Citizen-facing,** creating mobile-friendly websites and mobile applications (apps) to better serve Texas citizens, an increasing number of whom expect to be able to perform transactions with the state via their mobile devices.
- **Workforce-facing,** adopting flexible workplace policies, providing mobile tools for employees, and authorizing employees to bring their own devices to work.

ASSESSMENT

According to the 2013 Information Resources Deployment Review, most state agencies are coming into alignment with this strategic priority:

- Eighty-nine percent of agencies have mobile strategies planned or in progress.
- Ninety-one percent said they had made progress towards addressing mobility strategies over the last biennium.
- Citizen-facing progress included innovative methods of delivering service through mobile websites and applications.
- Workforce-facing progress included support of a more mobile workforce through remote working, bring-your-own-device (BYOD) policies, and issuing mobile devices to employees.

Citizen Mobility

The American public increasingly connects to the Internet through mobile devices, including smartphones and tablet computers. Approximately 58 percent of American adults report owning a smart-

PRIORITY STATEMENT

Support the needs of an increasingly mobile citizen and workforce population.

phone, and in 2013, 63 percent of American cell phone owners reported using their phones to access the Internet, up from 31 percent in 2009. Tablet computer ownership has also increased exponentially, with 42 percent of Americans owning a tablet computer in 2014, up from three percent of the American public in 2010. This year, mobile device Internet usage surpassed desktop Internet usage—and significantly, most of that usage is driven by mobile applications, not browsers on mobile devices.

Citizens therefore increasingly access state websites with mobile devices, and expect mobile functionality in services provided by agencies. Agencies can meet this demand in two ways: first, by designing responsive, mobile-friendly agency websites with simplified user interfaces, easily clickable icons, and optimized information infrastructure; and second, by developing and releasing mobile applications for download on smartphones or tablets.
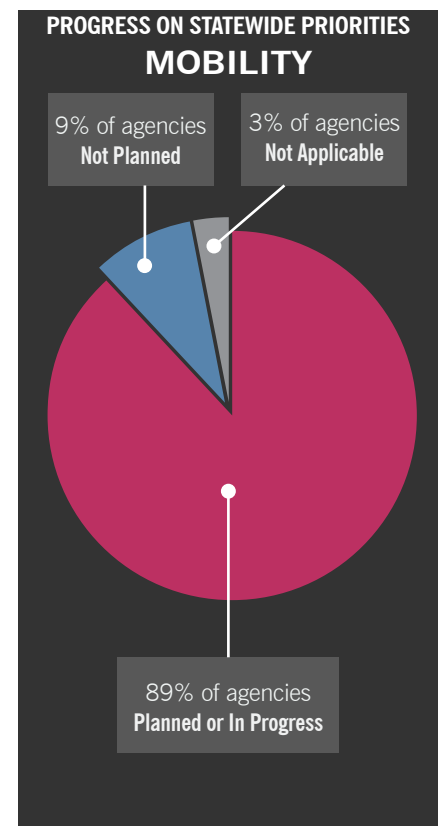
The Mobile Workforce

One way agencies have adapted to a mobile workforce is through the adoption of remote working policies. These policies demonstrably improve retention rates and employee productivity while achieving cost savings for the state and increasing disaster recovery capabilities. Remote working policies have broad support from agencies, with 80 percent of agencies reporting implementation or plans to implement telework policies. Of agencies without a telework policy, the most frequently cited reason was a lack of high-level or executive commitment.

Agencies can also achieve productivity gains by allowing employees to bring their own mobile devices to work. However, just 56 percent of agencies have a policy addressing the use of non-agency-owned devices like personal computers or mobile devices, and only 58 percent of agencies have policies addressing the storage of agency data on these non-agency owned devices. Adopting BYOD policies delivers cost savings by incorporating employees' own devices into the work place, builds a workforce that is more responsive for a longer period of the day, and increases employee satisfaction. However, agencies need to develop policies to require compliance with statewide security standards, and may need to assess and upgrade network infrastructure to support extra devices.

Finally, agencies have explored substituting or supplementing traditional desktop computing by issuing employees mobile devices, including tablets and smartphones. Successful deployments of agency-issued mobile devices took into consideration several factors:
- the appropriate fit for the work environment and end-user receptiveness to new hardware;
- both the upfront costs of the device and the costs over its lifetime, including data usage packages; and
- capability of agency back-end infrastructure to support the devices.

PROGRESS ON STATEWIDE PRIORITIES
MOBILITY

9% of agencies
Not Planned

3% of agencies
Not Applicable

89% of agencies
Planned or In Progress

Percentages may not total 100 due to rounding.

ACCOMPLISHMENTS

Significant progress has been achieved in providing mobility solutions to citizens and to the state workforce:

- The **Health and Human Services Commission** has led the way on enabling employees to telework, realizing gains in employee retention, productivity, and customer service. The agency has had a formal teleworking policy in place since 2011, and approximately 400–500 employees at HHSC telework on a regularly scheduled basis as of 2014.

- The **Department of Public Safety** piloted the use of all-in-one handheld tablets with their officers on the road. Officers making traffic stops needed a computing device that was also tough enough to survive heavy use in all conditions. Tablets were chosen to fit the business needs of the agency. They allowed DPS officers to provide courts with a higher evidentiary standard when documenting a violation while also promoting the safety of the roadside officers.

- **Texas.gov**, operated by DIR, launched a new, mobile-friendly user interface for the shared payment services engine and 23 Texas.gov applications this past biennium. The website now features responsive web design and provides a simpler user experience. The website's redesign especially improved the experience of mobile device users, who make up 23 percent of the site's traffic. In addition to launching a mobile-friendly redesigned website, Texas.gov also released a mobile application.

- The **Texas Alcoholic Beverage Commission** (TABC) has developed a Complaint Reporting Application for citizens to log real-time violations of licensees and an *Intoximaze* application to educate consumers about alcohol poisoning in an engaging game stimulation, both via the Android platform.

- The **Texas Parks and Wildlife Department** has released a Texas Freshwater Fisheries Center application on multiple platforms, informing citizens about educational exhibitions including fresh water fishing attractions, museums, and aquariums.

CONCERNS

Mobility is not a new concept, rather a necessary part of IT strategies:
- Just over half of agencies have adopted or considered adopting BYOD policies, too few to realize serious statewide gains in

productivity and cost savings. Without a formal BYOD policy, agency policies will suffer from a lack of clarity, and employees may use their own devices clandestinely.

- The proliferation of agency-issued or employee-owned mobile devices in the workplace may require further investment in the agency's back-end infrastructure, as the network supports more devices.
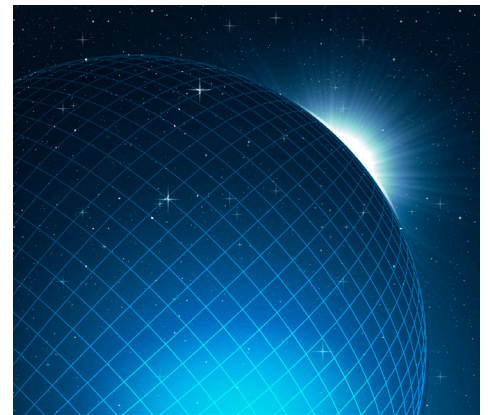
LEGISLATIVE RECOMMENDATIONS

At this time, sufficient progress can be made in this area without additional legislative action.

NETWORK

State agencies continue to rely on telecommunications networks as a fundamental technology to access information, communicate, and deliver services to other government agencies (federal, state, and local), business partners, as well as citizens. Network technologies provide the foundation for data, voice, and video to navigate within and across agencies, and to reach constituents throughout the state.

Because it is a necessary technology for service delivery, a resilient and reliable network infrastructure is essential to the implementation of other technology priorities such as *Cloud Services* and *Mobility*, and is a crucial component of *Security and Privacy*, as well as *Business Continuity*.

The standards for network infrastructure have increasingly converged from distinct voice and data transmission technologies to a common Internet Protocol (IP)-based technology that transmits voice, data, and video across the network in digital form. The state's network is an important gateway to the Internet, which has become the conduit to citizens who rely on seamless connections to government services and information.

ASSESSMENT

Network technologies remain a top priority of state government as reported by the National Association of State Chief Information Officers. Technology consulting firm Gartner also considers network-based technologies, related to "the Internet of Things," mobility, and bring-your-own-devices (BYOD) as top strategic technologies for 2014. Finally, Forrester Research reports that digital convergence has eroded boundaries and both workers and citizens increasingly expect continuous connectivity to conduct work and business—whether in the office, at home, or while mobile.

Reports from the 2013 Texas Information Resources Deployment Review (IRDR) show that agencies have a strong interest in emerging

PRIORITY STATEMENT

Provide innovative network services to allow agencies to improve efficiency and successfully deliver citizen services.

network technologies and how they can enhance government business:

- Seventy-six percent have implemented solutions to support remote working arrangements.
- Fifty-two percent report they currently have an active mobile work-force.
- Twenty-eight percent have an operational Voice over IP (VoIP) service, while 18 percent are exploring the potential of VoIP.
- Thirty-three percent have a videoconferencing system.
- Fifty-six percent of state agencies report having a wireless data service.

The passage of HB 2414 and SB 984 during the 83rd Texas Legislature Regular Session (83R) amended The Open Meetings Act (Chapter 551 of Texas Government Code), which allows board members and commissioners of a governmental body to participate in open meetings via videoconference. Although videoconferencing systems can be utilized for a variety of business purposes, this new provision will require agencies to ensure their networks and facilities can accommodate the technical standards necessary for successful videoconferencing transmission.
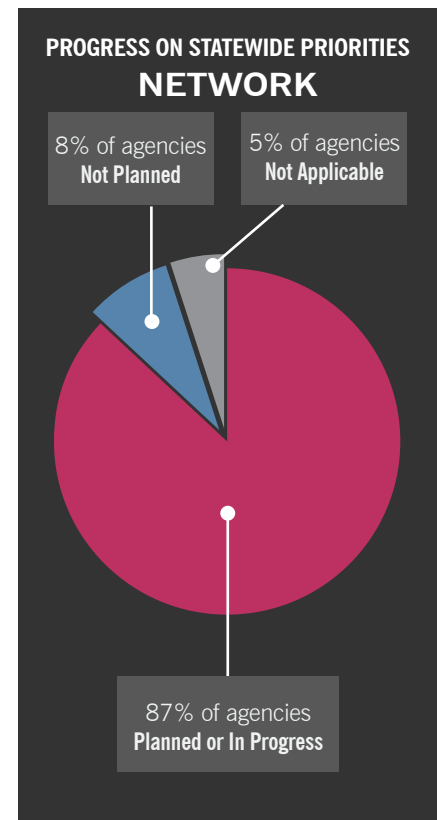
ACCOMPLISHMENTS

In Texas state government, DIR offers an enterprise solution for telecommunications and data network solutions through its Texas Agency Network (TEX-AN) contracts and telephone service through the Capitol Complex Telephone System (CCTS).

Collaboration between DIR and state agencies has led to the development or implementation of technology upgrades and new services that can increase government efficiency and better serve constituents:

- In fiscal 2014, DIR's Capitol Complex Telephone System (CCTS) implemented pilot projects with the **General Land Office**, among other agencies in the Capitol Complex, with the goal of transitioning customers off the existing traditional phone system technology to a new VoIP solution at the same or lower cost.

- The VoIP platform will enable Unified Communications and Collaboration services for Capitol Complex customers. This technology allows users to transition seamlessly among email, instant messaging, voice, and video to enable collaboration. It also provides the capacity for a softphone application that allows a user to make calls using a computer and provides anywhere access from mobile devices such as tablets and laptops.

- The **Texas Real Estate Commission**, in collaboration with DIR, conducted pilots to determine the effectiveness of having board

PROGRESS ON STATEWIDE PRIORITIES
NETWORK

8% of agencies
Not Planned

5% of agencies
Not Applicable

87% of agencies
Planned or In Progress

members participate in an open meeting through videoconferencing technology. DIR has developed guidelines that offer technical and planning guidance for utilizing videoconferencing during a board meeting.

- DIR has worked with a number of agencies with remote rural offices to discover the potential of 4G Long Term Evolution or LTE wireless networks as a cost-effective substitute for hard-wire infrastructure. DIR's *Study on the Use of Tablet Computers* revealed the **Texas Department of Public Safety**, the **Texas Department of Transportation**, and the **Texas Department of Family and Protective Services** are successfully using wireless networks to connect their highly mobile workers.

- The DIR-managed Austin Metropolitan Area Network, which serves state agency facilities throughout the Austin area, is being upgraded to a next generation 100 Gigabit network providing enhanced bandwidth to increase capacity for voice, video, and data traffic. Internet capacity has also been enhanced to meet the demands of increasing Internet traffic among state agencies within Austin.

CONCERNS

As agencies use more data center services or cloud-based services, the requirements for network bandwidth will expand. The future needs of network capacity are uncertain without proper reporting and planning. The increasing use of online government services by citizens and businesses also requires increased bandwidth for the state's Internet infrastructure.

The use of VoIP and IP-based video for videoconferencing will require agency network administrators to evaluate their current network environment to determine if their cabling, firewalls, and power systems will accommodate IP-based voice and video transmissions. VoIP implementation also has some implications for the use of traditional 911 emergency phone calls.

As technological changes allow for the increasing use of remote and mobile workers, the requirements for secure and enhanced wireless networks must be established by agencies to protect citizen data.

LEGISLATIVE RECOMMENDATIONS

At this time, sufficient progress can be made in this area without additional legislative action.

SUPPLEMENTAL REPORTS

The following pages include individual program reports that are required to be submitted as part of the Biennial Performance Report.

REPORT ON STATE TECHNOLOGY EXPENDITURES

This report addresses Section 2054.055(b)(4) of the Texas Government Code, which requires DIR to provide a summary of the total expenditures for information resources technologies by the state. Although DIR used the best-available statewide data to estimate the state's total technology expenditures for fiscal 2013 and 2014, limitations in the granularity of that data make it difficult in some cases to precisely separate IT from non-IT items. All figures presented in this report should be considered as estimates. Sums shown have been rounded.

SUMMARY

DIR estimates that Texas state government (including agencies and institutions of higher education) spent $2.7 billion on information resources technologies in fiscal 2013 and $3.0 billion in fiscal 2014. This represents 2.38 percent of the state's total net expenditures in fiscal 2013 and 2.54 percent of the state's total net expenditures in fiscal 2014. These figures compare closely with previous technology expenditure rates of 2.62 percent in fiscal 2011 and 2.54 percent in fiscal 2012.

Texas spends significantly less on technology than other states. Gartner, Inc., estimates that other states and local governments spend on average 3.9 percent on technology. The potential exists to boost productivity of Texas government programs through additional, carefully managed IT investment.

State agencies and institutions of higher education are addressed separately in this report due to differences in their missions, and because their IT expenditure estimates were derived from different source data. A combined estimate of the state's total technology expenditures is included in the final section of the report.

STATE AGENCIES

Data Sources

Technology expenditures fall into two broad categories: *staff compensation* and *goods and services*. For state agencies, the best available data for staff compensation comes from the Comptroller's Uniform Statewide Payroll/Personnel System (USPS) and the Standardized Payroll/Personnel Reporting System (SPRS). Texas has 882 job classifications, of which 54 are categorized as IT. Because some state technology workers have non-technology job classifications, the figures from the payroll systems slightly understate the true payroll expenditures.

The best available data for state agency expenditures on technology-related goods and services is the Comptroller's Uniform Statewide Accounting System (USAS). Technology expenditure estimates based on USAS are approximate because some of the goods and services categories do not precisely differentiate between technology and non-technology expenditures.

State Agency Technology Expenditures

Table 1 shows state agency technology expenditures for total staff compensation and for goods and services, by category, for the last eight fiscal years.

Table 1. Estimated State Agency Technology Expenditures

(Dollars rounded in millions)

STATE AGENCIES	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Total, Staff Compensation	**$204.0**	**$240.6**	**$305.7**	**$261.1**	**$270.8**	**$261.6**	**$259.9**	**$258.3**
Goods and Services								
Computer Hardware	$227.1	$240.6	$174.1	$209.4	$219.3	$217.1	$160.9	$208.2
Computer Software	$119.8	$122.5	$127.1	$171.2	$131.9	$139.8	$158.9	$179.5
Contract Services	$413.8	$428.0	$510.3	$553.2	$663.9	$553.2	$461.8	$569.0
Data Center Services	$7.7	$153.3	$172.1	$190.9	$169.2	$174.3	$185.4	$193.1
Telecom Hardware	$30.9	$36.0	$52.7	$53.3	$139.6	$111.8	$110.8	$122.2
Telecom Services	$178.8	$220.5	$169.8	$218.4	$163.6	$158.8	$167.4	$179.1
Supplies	$17.6	$19.6	$19.7	$19.3	$19.2	$17.8	$18.0	$19.1
Training	$11.0	$12.1	$13.9	$14.3	$11.4	$11.0	$10.2	$10.1
Total, Goods and Services	**$1,006.7**	**$1,232.6**	**$1,239.7**	**$1,430.1**	**$1,518.3**	**$1,389.9**	**$1,273.4**	**$1,480.3**
GRAND TOTAL	**$1,210.7**	**$1,473.2**	**$1,545.4**	**$1,691.2**	**$1,789.1**	**$1,645.5**	**$1,533.3**	**$1,738.8**

Figure 1A shows trends in state agency IT staff contrasted with IT goods
and services expenditures over the last eight years. Over time, IT staff
compensation levels have remained steady, while expenditures for IT goods
and services have risen somewhat. Currently, about 15 percent of agency
technology expenditures is for staff compensation, and about 85 percent is
for goods and services.

Figure 1A. Estimated State Agency Technology Expenditures: Staff versus Goods and Services
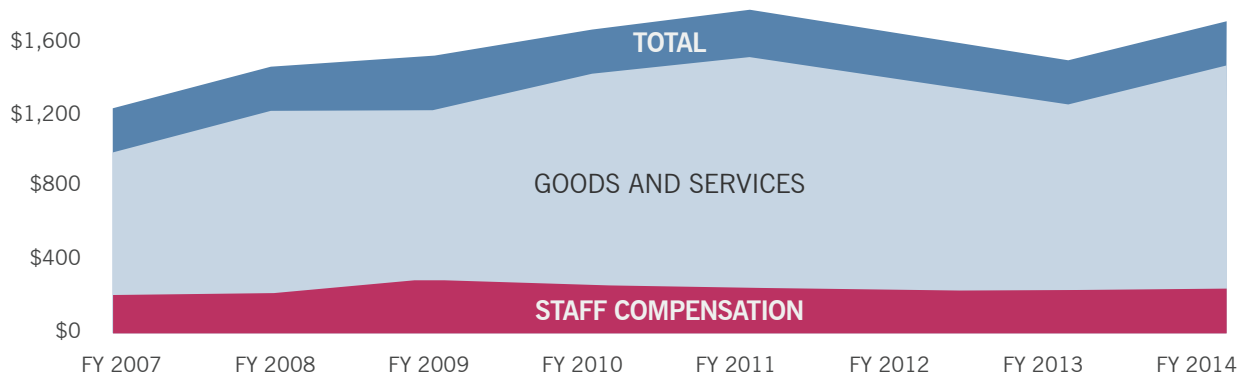
(Dollars rounded in millions)

Figure 1B shows state agency expenditure trends within several major
categories of goods and services. Over time, expenditures for computers,
telecom, and data center have remained fairly steady, while expenditures
for contracted services have experienced larger fluctuations and have
grown moderately. Total state agency technology expenditures increased
5.7 percent between fiscal 2012 and 2014.

Figure 1B. Estimated State Agency Technology Expenditures: Categories of Goods and Services

(Dollars rounded in millions)
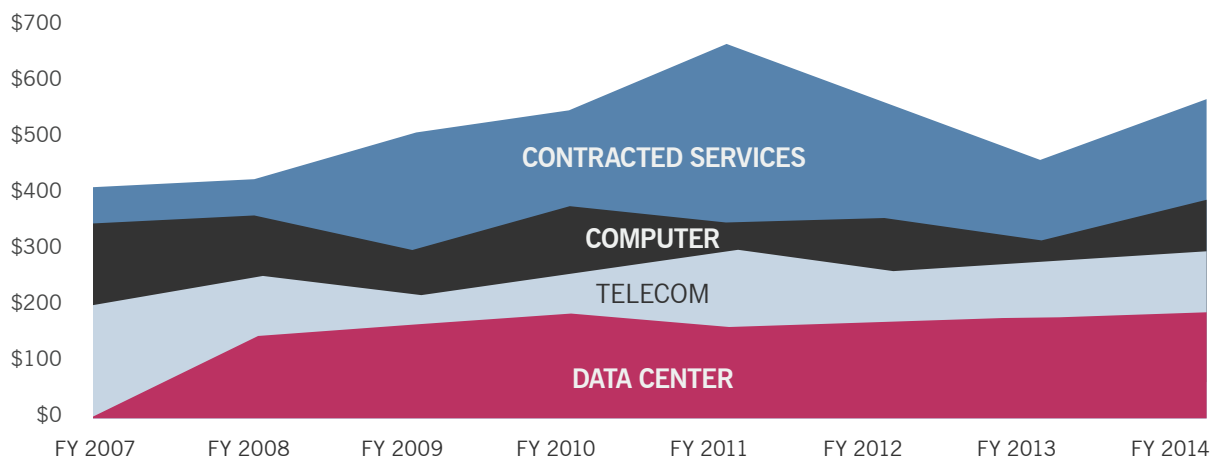
INSTITUTIONS OF HIGHER EDUCATION

Data Sources

The best available higher education technology expenditure data—for both staff compensation and goods and services—comes from the annual Core Data Survey (CDS) conducted by EDUCAUSE, Inc.

Some institutions do not participate in the Core Data Survey; expenditures for non-participating institutions were estimated by extrapolation based on institution size. This extrapolation introduces some uncertainty in the technology expenditure estimate. To reduce this uncertainty, DIR is considering requesting institutions that do not participate in the survey to report their technology expenditures directly to DIR.

Higher Education Technology Expenditures

Table 2 shows estimated technology expenditures for higher education institutions for both staff compensation and goods and services from fiscal 2007 through 2014. Sub-categories are not shown under goods and services, as these are not available in the Core Data Survey.

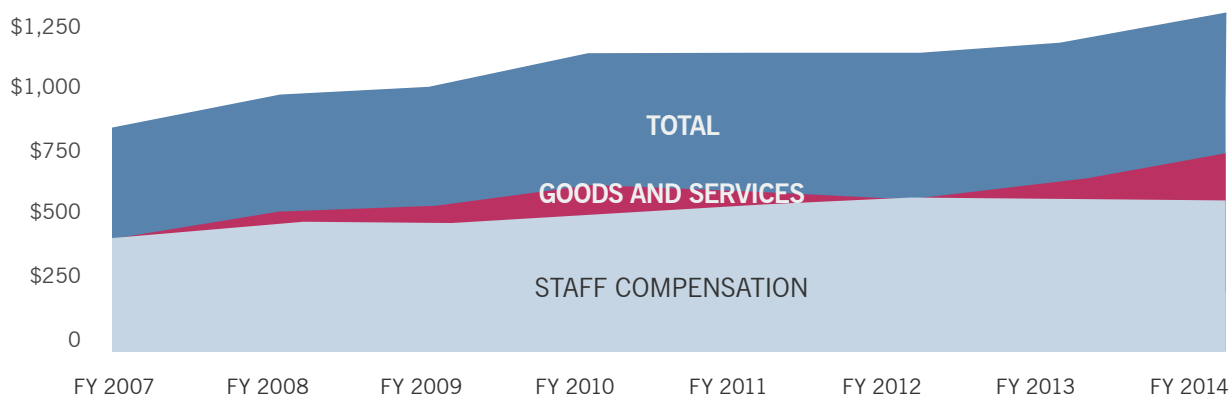**Table 2. Estimated Higher Education Institution Technology Expenditures**

(Dollars rounded in millions)

HIGHER EDUCATION	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Total, Staff Compensation	$431.1	$473.7	$473.4	$522.5	$551.5	$580.5	$568.3	$533.9
Total, Goods and Services	$407.0	$501.5	$539.2	$622.0	$592.2	$562.5	$638.1	$744.1
GRAND TOTAL	$838.1	$975.3	$1,012.6	$1,144.4	$1,143.7	$1,143.1	$1,206.4	$1,278.0

Figure 2 shows trends in higher education IT staff vs. IT goods and services expenditures over the last eight years. Over time, expenditures in these two areas have been comparable, although in the last two years staff expenditures declined slightly while goods and services expenditures rose significantly. Total higher education technology expenditures increased 12 percent between fiscal 2012 and 2014.

Figure 2. Estimated Higher Education Technology Expenditures: Staff versus Goods and Services

(Dollars rounded in millions)

COMBINED STATEWIDE TECHNOLOGY EXPENDITURES

Combining results from the previous two tables, Table 3 and Figure 3 show DIR's estimate of statewide technology expenditures for fiscal 2007–2014, by staff compensation and goods and services for state agencies and institutions of higher education.
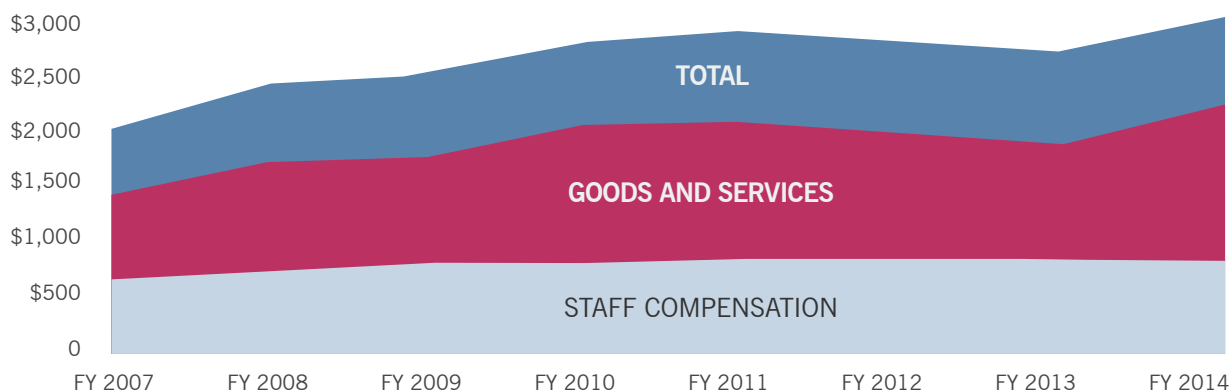
Table 3. Estimated Statewide Technology Expenditures by Major Expenditure Category

(Dollars rounded in millions)

EXPENDITURE CATEGORY	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Staff Compensation	$633	$714	$779	$784	$822	$842	$828	$792
Goods and Services	$1,416	$1,734	$1,779	$2,052	$2,111	$1,946	$1,911	$2,224
TOTAL	$2,050	$2,448	$2,558	$2,836	$2,933	$2,789	$2,740	$3,017

Figure 3. Estimated Statewide Technology Expenditures by Major Expenditure Category

(Dollars rounded in millions)

DIR estimates that statewide technology expenditures remained roughly constant in fiscal 2013 at $2.7 billion, and rose in fiscal 2014 to $3.0 billion.

Over time, statewide IT staff compensation levels have remained steady, while expenditures for IT goods and services have risen. Over the last two years, about 26 percent of statewide technology expenditures is for staff compensation, and about 74 percent is for goods and services.

Table 4 and Figure 4 show the same estimate of statewide technology expenditures, but broken down by agencies and institutions of higher education.

Table 4. Estimated Statewide Technology Expenditures by Organization Type
(Dollars rounded in millions)

ORGANIZATION TYPE	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
State Agencies	$1,211	$1,473	$1,545	$1,691	$1,789	$1,646	$1,533	$1,739
Higher Education	$839	$975	$1,013	$1,144	$1,144	$1,143	$1,206	$1,278
TOTAL	$2,050	$2,448	$2,558	$2,836	$2,933	$2,789	$2,740	$3,017

Figure 4. Estimated Statewide Technology Expenditures by Organization Type
(Dollars rounded in millions)
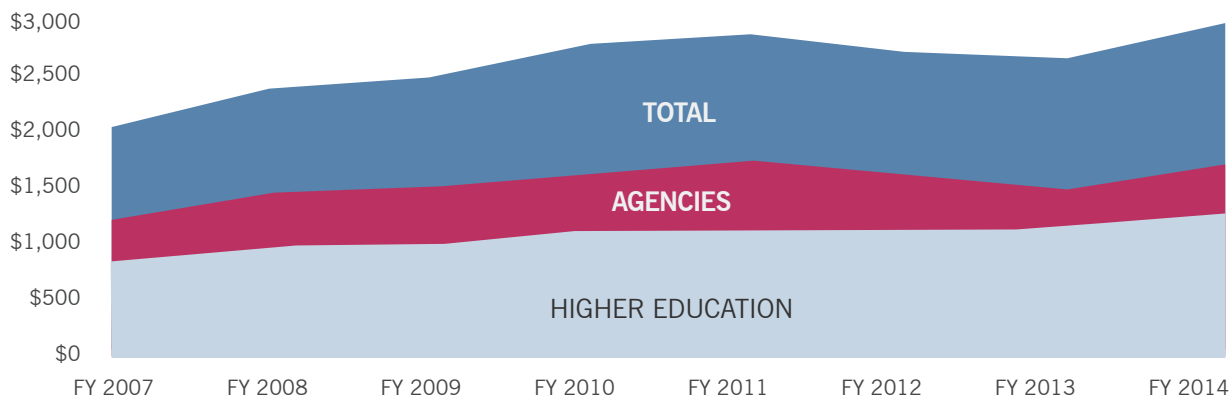
Over the past eight years, technology expenditures have risen at approximately the same rate for state agencies and institutions of higher education. Currently, state agencies account for about 57 percent of total state technology expenditures and institutions of higher education account for about 43 percent.

TECHNOLOGY EXPENDITURES AS A PERCENTAGE OF STATE EXPENDITURES

A key metric in assessing public sector technology expenditures is the percent of technology expenditures to total expenditures. The Comptroller's *Texas Annual Cash Report* identifies total state-funded expenditures by fiscal year. Note that only state-funded IT expenditures are included in the calculation of the percentage of state expenditures for technology.

Table 5 and Figure 5 show DIR's estimate of technology expenditures as a percentage of total state expenditures for the past eight years.

Table 5. Estimated State Technology Expenditures as a Percent of Total State Expenditures

(Dollars rounded in millions)

STATE EXPENDITURES	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Technology Expenditures	$1,782	$2,145	$2,219	$2,481	$2,501	$2,394	$2,227	$2,527
All Expenditures	$74,501	$81,936	$88,576	$90,434	$95,459	$94,257	$93,567	$99,655
TECHNOLOGY PERCENT	**2.39%**	**2.62%**	**2.51%**	**2.68%**	**2.62%**	**2.54%**	**2.38%**	**2.54%**

Figure 5. Estimated State Technology Expenditures as a Percent of Total State Expenditures
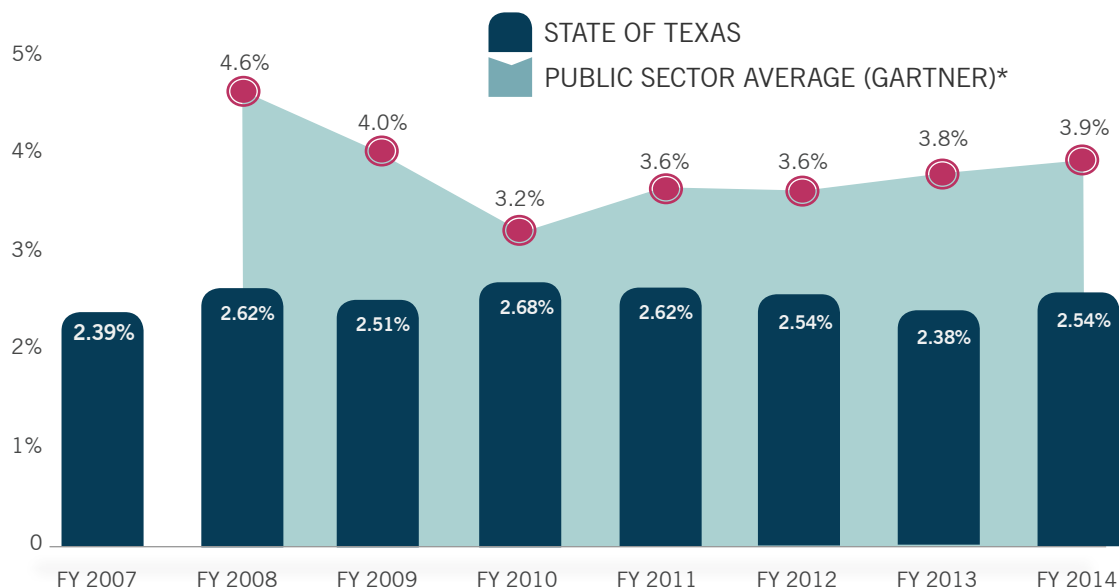
* Source of public sector average data: "IT Key Metrics Data 2014: Key Industry Measures: Government: State and Local Analysis: Multiyear." Gartner, Inc. Benchmark Analytics G00258846, 16 December 2013. Page 14, Figure 3: "Government – State and Local: IT Spending as a Percent of Operational Expense." Public sector average unavailable before 2008.

While technology spending in the state has increased slightly over the past six years, it has remained roughly constant as a percentage of total state expenditures. At approximately 2.5 percent, Texas remains well under national averages for technology spend in state and local government, which averaged 3.8 percent of operating expenses in fiscal 2013 and 3.9 percent of operating expenses in fiscal 2014.

This apparent underspend suggests an opportunity to improve the cost-effectiveness of Texas government programs through carefully managed "right-sizing" of state IT investments. The U.S. Bureau of Labor Statistics has estimated that from 2002 to 2012, 70 percent of U.S. productivity growth came from information technology.

REPORT ON EIR ACCESSIBILITY

This report addresses Section 2054.055(b)(9) of the Texas Government Code, which requires DIR to provide a summary of agency and state progress in providing access to electronic and information resources (EIR) to individuals with disabilities.

BACKGROUND

According to the 2012 Cornell University Disability Statistics, more than three million people have disabilities that can affect their interaction with the Internet, the telephone, and other means of electronic communication. By focusing on making state agency EIR accessible, citizens who seek information from the state, work for the state, or apply for state services will be able to perform these functions independently, regardless of disability.

The 79th Texas Legislature (2005) strengthened state accessibility laws by requiring state agencies to develop, procure, maintain, and use EIR that are accessible to Texas citizens with disabilities, including state employees.

DIR has adopted statewide standards relating to the EIR accessibility of state websites (1 TAC 206) and relating to EIR technologies (1 TAC 213) in Texas Administrative Code (TAC).

DIR collaborates with organizations in a variety of efforts related to state-wide EIR accessibility to
- identify and communicate best practices for EIR accessibility compliance issues.
- evaluate and recommend revisions to statewide accessibility standards, rules, and guidelines.
- monitor federal and state legislation to identify changes in laws that have statewide impact on agency EIR accessibility policies, standards, and guidelines.

EIR ACCESSIBILITY INITIATIVES

Over the last biennium, there has been continued progress across state agencies and institutions of higher education in making EIR accessible to people with disabilities. The degree of improvement varies from agency to agency. DIR recognizes the complexity and the challenges of complying with rules on EIR accessibility, and has initiated and executed several important initiatives toward improving EIR accessibility throughout state government.

- **DIR Web Accessibility Scanning Program**
  In 2012, DIR launched a biennium-long, free web scanning service to assist Texas agencies in improving external website accessibility. The service was provided at no cost to agencies and used automated accessibility scanning to analyze websites for accessibility errors. Scans were performed monthly and results sent to the agencies to assist them in identifying and remediating accessibility related issues.

  Approximately one-third of Texas agencies took advantage of this service. Of the 53 agencies that participated, 36 percent reported improved website compliance since the time of their initial scan, while 10 percent reported no change. Websites are dynamic, and daily changes to site content can affect compliance rates.

- **Review of TAC 213 EIR Accessibility**
  In 2014, DIR convened a workgroup of stakeholders to review TAC 213. The review focused on governance provisions within the rule that are considered key inhibitors to compliance for state agencies and institutions of higher education. Certain sections of TAC 213 were not updated during review due to delays in the adoption of changes to U.S. Section 508 of the Rehabilitation Act of 1973, the federal regulation from which Texas technical accessibility standards are based. Revisions to the state's technical accessibility standards will be addressed once the changes to U.S. Section 508 are adopted. The changes to TAC 213 include the following highlights:
    - Introduction of new language to help improve an agency's ability to procure accessible products and services.
    - Option to request evidence from vendors about the accessibility of IT products and services.
    - Requirement to implement a procurement accessibility policy, supporting business processes and contract terms, for making procurement decisions.
    - Requirement to perform accessibility testing and produce test documentation by a knowledgeable agency staff member or third-party testing resource for projects that

meet the criteria of a major information resource project.

- Requirement to establish goals for making EIR accessible, including progress measurements toward meeting those goals.

▪ **Accessible Products and Services in DIR's Cooperative Contracts Program**
To address issues of the quality of accessibility documentation submitted by vendors in response to DIR contract solicitations, DIR developed and implemented a system for evaluating the credibility of accessibility documentation contained in vendor responses. Documentation concerns are communicated to vendors during the negotiation phase of the solicitation so that vendors can provide complete documentation for use by DIR customers to determine accessibility of products and services.

▪ **Policy-Driven Adoption for Accessibility (PDAA)**
In 2013, DIR launched a multi-state initiative to develop accessibility policy criteria for vendors that sell to the public sector. The PDAA initiative received participation from high-level representatives in 10 states and one federal agency. DIR and the Commonwealth of Massachusetts have begun testing PDAA by including the vendor self-assessment in solicitations.

▪ **Project Delivery Framework Accessibility Integration**
In 2014, DIR took steps to integrate accessibility criteria into the Texas Project Delivery Framework processes and tools to ensure that accessibility is planned for and fully implemented in major information resource projects.

▪ **Collaboration site for EIR Accessibility Coordinators**
In fiscal 2014, DIR launched a secure and accessible collaboration website for exclusive use by Texas state agency EIR accessibility coordinators. The purpose of the website is to provide accessibility coordinators from across the state a secure environment to ask questions, obtain information, share experiences and practices, and collaborate on projects.

OUTREACH

Outreach continues to be an important part of EIR accessibility efforts. During the biennium, DIR continued its commitment to providing leadership in EIR accessibility at the national, state and local levels.

- In 2014, DIR sponsored a half-day accessibility forum for Texas EIR accessibility coordinators and state information resource managers.

The agenda featured speakers from industry and the state on a number of important accessibility topics. Feedback on the event was positive, and this will be a recurring event.

- Enrollment in the Public Electronic Services on the Internet (PESO) group has continued to expand, reaching over 300 members from across the state, representing both the public and private sectors. Along with discussion forums, PESO has continued to host monthly meetings with guest speakers from both government and industry presenting information on EIR accessibility, social media, and other relevant issues.

- DIR delivered accessibility presentations at a variety of conferences and groups during this period:
  - National Association of State Chief Information Officers
  - Texas Agency Social Media Workgroup
  - Executive Leadership in Information Technology Excellence (ELITE)
  - AccessU Accessibility Conference

- DIR continued in its role serving as an EIR accessibility consultant to a Texas agencies, institutions of higher education, and the vendor community on a wide range of accessibility-related topics.

Also during this biennium, DIR dissolved the charter for the Accessibility Council of Texas, integrating its function into the Customer Advisory Committee, chaired by DIR's Chief Customer Officer.

INFORMATION RESOURCES DEPLOYMENT REVIEW

Agencies report on their compliance with EIR accessibility standards and provide other accessibility-related information the Information Resources Deployment Review (IRDR). Agencies continue to show progress and increased compliance levels since 2011, but results indicate that challenges remain.[1]

As mentioned in a previous section, DIR offered free accessibility website scanning to agencies in fiscal 2013 and 2014. Fifty-three agencies took advantage of this free program. It is unknown how agencies that did not participate in the scanning program estimated the accessibility of their websites.

The following findings are based on an analysis of state agency respons-

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1   Institutions of higher education were not required to participate in the IRDR; therefore there is no 2013 data available for them. In the future, a separate survey that contains the IRDR accessibility questions will be administered to institutions of higher education on a cycle consistent with IRDR administration.

es to the 2013 IRDR. Figure 1 shows a comparison of 2013 and 2011 IRDR-reported results for agencies' public web pages that are accessibility compliant. While the number of compliant pages shows a general decrease from 2011 to 2013, the change may be attributed to awareness and more accurate reporting. A number of agencies still have not assessed their complete websites for accessibility, which is reflected in the "data not available" area of the chart.

Figure 1. State Agency Accessibility-Compliant Public Web Pages

What percentage of the agency's externally facing web pages, including web applications, are in full compliance with state accessibility requirements in 1 TAC 206/213?
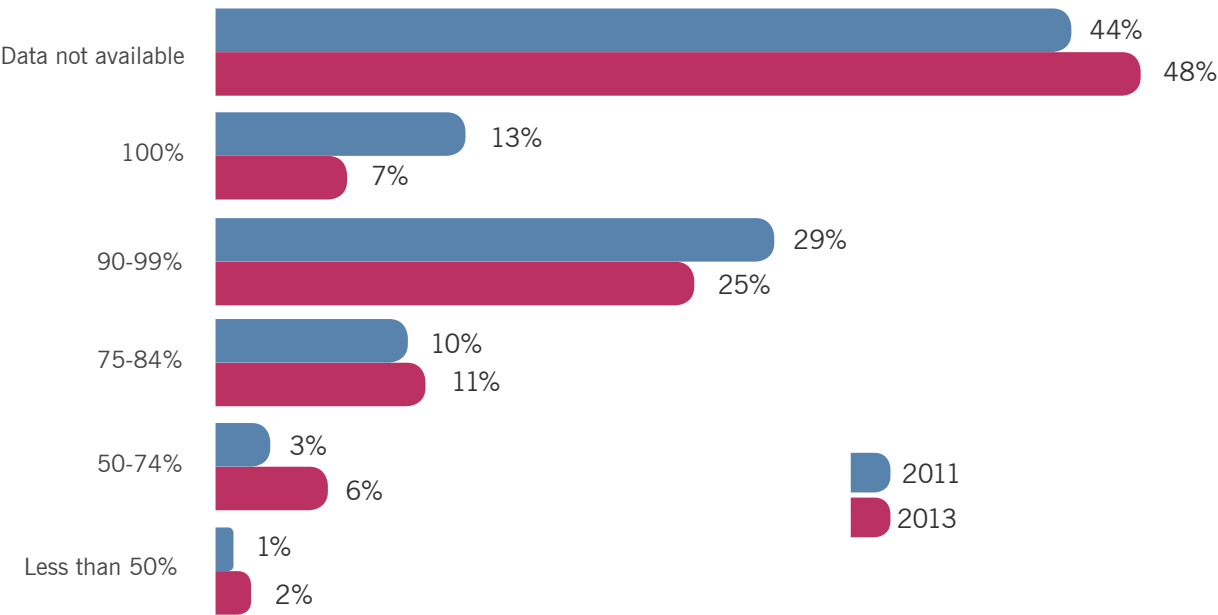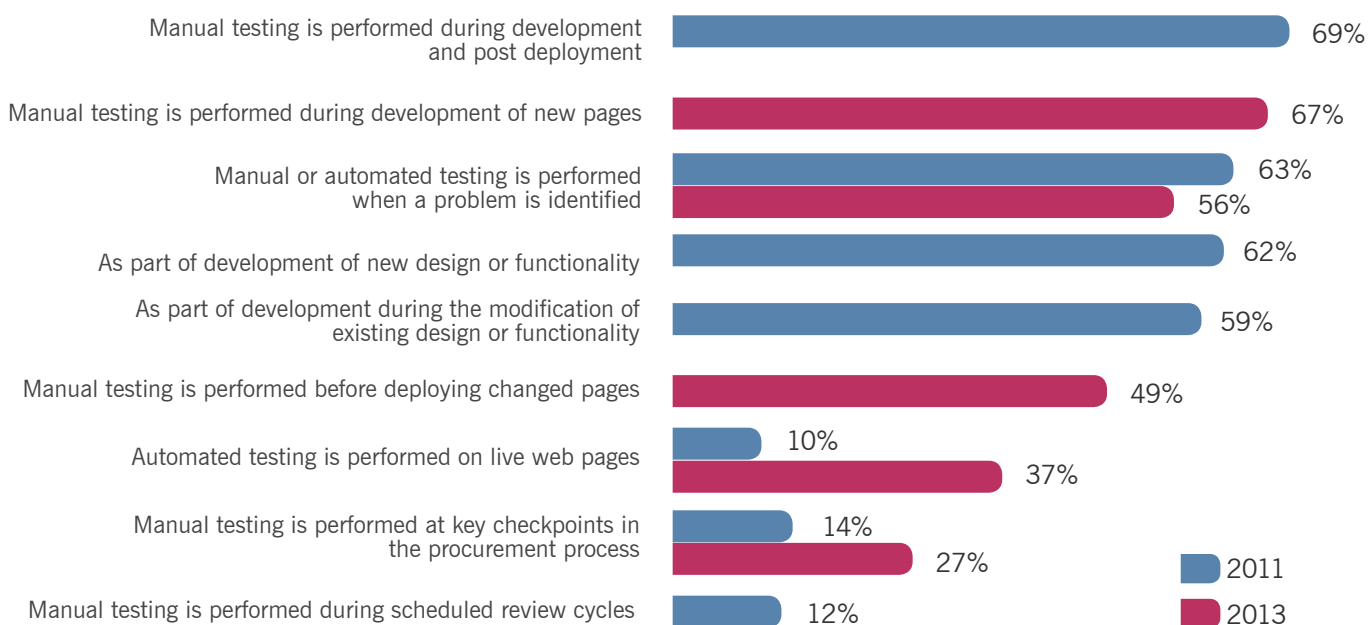
Figure 2 shows the process used by agencies to test new and changed pages for accessibility errors on their public websites, comparing the 2013 responses to 2011.

Note: There were several options created in 2013 that were added or modified from the 2011. Those that were not changed are represented with both colored bars, while those selections that changed are represented with a single bar.

Figure 2. Methods for Checking the Accessibility of New/Changed Pages Posted to Public Websites (Multiple selections permitted)
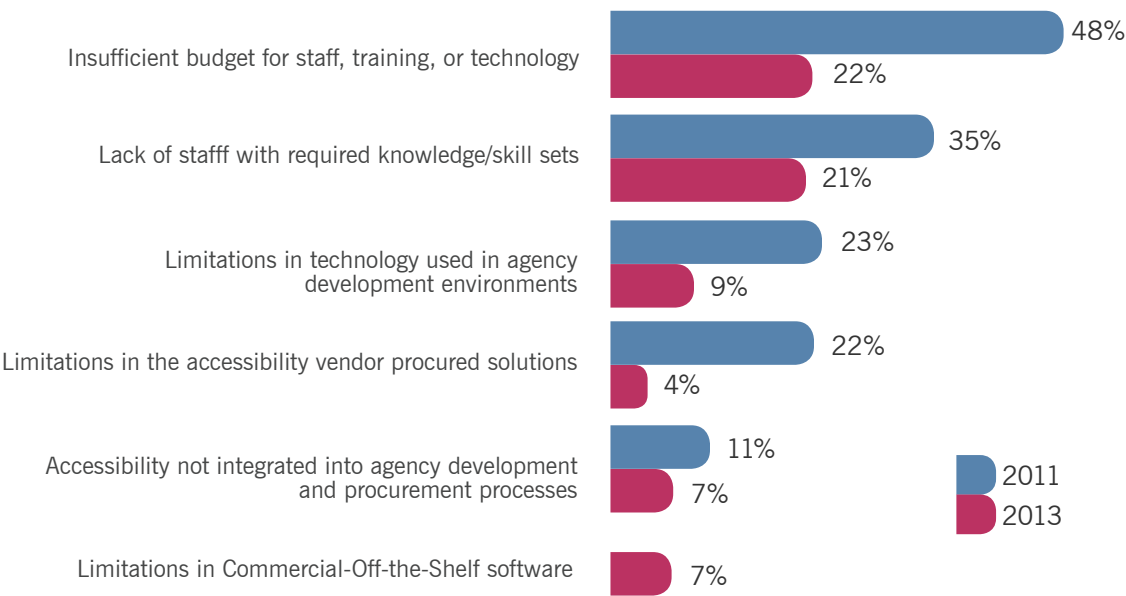
What percentage of the agency's externally facing web pages, including web applications, are in full compliance with state accessibility requirements in 1 TAC 206/213?

Method	
Manual testing is performed during development and post deployment	69%
Manual testing is performed during development of new pages	67%
Manual or automated testing is performed when a problem is identified	63% / 56%
As part of development of new design or functionality	62%
As part of development during the modification of existing design or functionality	59%
Manual testing is performed before deploying changed pages	49%
Automated testing is performed on live web pages	10% / 37%
Manual testing is performed at key checkpoints in the procurement process	14% / 27%
Manual testing is performed during scheduled review cycles	12%

2011
2013

Challenges identified by agencies as inhibitors to full compliance are shown in Figure 3. The results indicated a decrease in inhibitors listed in the survey.

What types of challenges, if any, has the agency confronted in increasing its level of compliance with state EIR accessibility requirements?

Challenge	2011	2013
Insufficient budget for staff, training, or technology	48%	22%
Lack of stafff with required knowledge/skill sets	35%	21%
Limitations in technology used in agency development environments	23%	9%
Limitations in the accessibility vendor procured solutions	22%	4%
Accessibility not integrated into agency development and procurement processes	11%	7%
Limitations in Commercial-Off-the-Shelf software		7%

AGENCY ACCOMPLISHMENTS

- **Texas Video Tutorials Receive Federal Communications Commission Chairman's 2014 Awards for Advancement in Accessibility**
  In 2010, ten state agencies collaborated to develop a new software menu and ribbon for MS Word and an accompanying set of training video tutorials. The videos are available on the Governor's website.

NEXT STEPS/RECOMMENDATIONS

- Agencies should perform thorough self-assessments of EIR policies and take corrective action to improve compliance with accessibility laws and rules.
- Agencies should develop and implement programs in preparation for the revisions to U.S. Section 508 technical standards including the integration of its accessibility technical standards into revisions to TAC 213.
- Agencies should use the new provisions in TAC 213 and Policy Driven Adoption for Accessibility (PDAA) to drive improvement in the procurement of accessible products and services.
- DIR should work with DIR's Customer Advisory Committee to identify issues and deliver solutions to improve the accessibility of EIR to all state employees and the public.

REPORT ON THE CONSOLIDATED NETWORK SECURITY SYSTEM

This report meets the requirements of Texas Government Code, Section 2059.057. It describes the consolidated network security system's "accomplishment of service objectives and performance measures, including financial performance."

BACKGROUND

Cybersecurity is the protection of the confidentiality, integrity, and availability of data and the associated information resources that transmit or store that data. It is an ongoing process that requires continuous, coordinated, and focused effort by all state agencies. The Texas Department of Information Resources, in consultation with agencies, continues to develop and expand its ability to monitor, assess, and assist in the safeguarding the state's information infrastructure from cyber-attacks.

DIR manages a statewide information security program and coordinates with agencies to protect state information and elevate the security posture and capabilities of the state. The Office of the Chief Information Security Officer (OCISO) within DIR oversees the statewide information security program which includes

- cybersecurity governance, policy and planning;
- comprehensive security program risk assessments;
- technical security assessment including controlled penetration testing and web application and host vulnerability assessment;
- security education and training;
- security event monitoring, analysis alerting, and incident response coordination; and
- network intrusion detection and prevention.

DIR also manages a Network and Security Operations Center (NSOC), a secure and resilient facility with security operations co-located and integrated with statewide network management functions. The NSOC supports the statewide information security program and provides cost-effective services to all state agencies and other eligible state entities.

PROGRESS

Participation in the statewide statewide information security program by state agencies and other eligible government entities is typically voluntary and can be limited by available funding. Where necessary, DIR utilizes a risk-based approach to provide services to eligible agencies.

Security Monitoring

DIR performs network monitoring of state-managed and -operated data networks and collaborates with a vendor to provide security services to eligible state agencies and entities. Extended security device monitoring services are available to agencies through a cloud-based platform that provides agencies with 24/7 security monitoring, security incident alerts, archival of incidents, and incident response support. The security monitoring function provides continuous monitoring and alerting for customer-designated, external-facing network components, e.g., firewalls, and intrusion detection and prevention systems. The security monitoring function has been utilized by agencies as indicated in Table 1 below.

Table 1. Security Monitoring within NSOC Agencies

Fiscal Year	Agencies Monitored	Devices Monitored
2013	28 (of 92)	49 total devices
2014	30 (of 92)	70 total devices

In collaboration with other state entities and federal cybersecurity organizations, DIR communicates threat warnings, vulnerability information, and indications of potential security incidents to affected entities within the state.

Technical Assessments

DIR provides agencies with technical security assessments including Controlled Penetration Testing (CPT) to evaluate network and systems vulnerabilities, and Web Application Vulnerability Scans (WAVS) to identify web application security vulnerabilities. Table 2 shows the number of WAVS and CPT provided by DIR in 2013 and 2014.

Table 2. Technical Assessments

Fiscal Year	Web Application Vulnerability Scans	Controlled Penetration Testing	Total
2013	73	48	121
2014	68	48	116

State Agency Security Program Assessments

DIR collaborates with an independent vendor to perform comprehensive security and risk management assessments of selected state agencies. There were 30 assessments completed in fiscal 2012 and 2013, and five assessments completed in fiscal 2014.

Educational Services

DIR provides cybersecurity education and training to state agencies at no-cost to the agency. These include DIR's annual Texas Information Security Forum and advanced technical cybersecurity training. DIR also provides other educational events including webinars, presentations, and workshops. Table 3 shows the number of agencies participating in education offerings during the fiscal 2013–14 biennium.

Table 3. State Agency and Institution of Higher Education Represented at Education Offerings

Fiscal Year	Agency Participation
2013	101 (of 144)
2014	124 (of 144)

Financial Consideration

Network security services are incorporated into the TEX-AN services contract providing additional value for TEX-AN customers. DIR has determined that all state agencies that are part of the consolidated state network are paying their proportional cost of baseline NSOC security services.

REPORT ON TEXAS.GOV

This report addresses Sections 2054.260 and 2054.055 of Texas Government Code, which require the Texas Department of Information Resources to report on the status, progress, benefits, and efficiency gains of the state electronic Internet portal, Texas.gov.

BACKGROUND

Texas.gov is the official website for the State of Texas. It has operated through a self-funded, public-private partnership since the year 2000. Texas.gov provides portal and payment services for Texas state agencies and eligible local governmental organizations, enabling them to cost-effectively conduct business with their customers online.

DIR provides contract management, strategic and operational oversight, enterprise-level coordination, and advocacy. The private partner provides all other aspects of program management, such as operational management, security management, a 24x7 help desk and service desk coverage, application development, and marketing.

Texas.gov offers more than 1,000 online services for over 300 state and local governments, including all 254 Texas counties. Since its inception, the site has processed over 230 million financial transactions. Examples of services provided by Texas.gov over the past two years include the following:

- Web-enabled payment processing that is integrated with the state's uniform statewide accounting system
- eFiling for courts
- State commodities procurement (Texas SmartBuy)
- Driver license renewals and authorized driver record access
- Vehicle registration renewals and specialty license plates
- Vehicle inspection licenses for facilities and inspectors
- Professional and occupational licenses
- Vital records like birth, death, and marriage certificates
- State licenses and permits for hunting, concealed handguns, Capitol access, etc.

These capabilities were developed at no cost to the state's budget, and allow citizens and private enterprises to conduct business online with state

agencies and other government organizations. DIR is authorized to establish transaction fees to recover the cost of developing, operating, and supporting these services. A percentage of this revenue is contributed to the state's general revenue fund.

PROGRESS

The ongoing mission of Texas.gov is to provide portal and payment services so that citizens and private companies can conduct business with Texas state agencies and other governmental organizations anytime and anywhere. To accomplish this mission, Texas.gov offers common infrastructure, development framework, governance, payment processing, and communications that allow agencies to provide a convenient, constituent-focused interface to agency business. Texas.gov has made significant progress in meeting and improving core capabilities and fulfilling the overall mission.

Additionally, program revenues allow the Texas.gov partnership to invest in new projects approved and prioritized through the appropriate site governance boards. Examples of non-revenue generating projects developed and supported by these funds include the Veterans Portal and the Texas Open Data Portal.

State Share of Revenue

The Texas.gov Master Agreement with the state's private partner, effective January 1, 2010, provided an increase in the percentage of revenue received by the state. The state share of revenue for fiscal 2013–14 was $71.3 million.[1] This represents a 28 percent increase in annual state revenue share over the previous biennium. The state share contribution remained stable, in spite of two key applications transitioning to direct agency management. The Legislature authorized the Office of Court Administration's eFiling application and the Comptroller of Public Accounts' TxSmartBuy to leave Texas.gov, reducing state revenue from these programs.

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1   This number is derived using a different timeframe and methodology than performance measures submitted to the Legislative Budget Board, which indicates the state share of revenue to be $70.4 million for fiscal 2013–14. Additionally, during fiscal years 2013 and 2014, approximately $1.77 million was deducted from the state share calculation of $71.3 million to cover data center costs in excess of Texas.gov contractual thresholds.

Security

All Texas.gov services and products maintain compliance with all applicable state, federal, and industry laws, rules, and regulations in accordance with documented processes.

The Texas.gov program payment engine, which allows credit cards to be accepted online, is certified each year as fully compliant with the Payment Card Industry's Data Security Standards (PCI-DSS), a requirement of credit card companies. This compliance is met through building and maintaining a secure network, protecting cardholder data, maintaining a vulnerability management program, implementing strong access control measures, regularly monitoring and testing networks, and maintaining an information security policy.

Mobility

As of September 2014, nearly 25 percent of all visitors to Texas.gov come from a mobile device or tablet. The use of mobile technology is rapidly growing:

- Analytics show that, since 2013, visits from desktop computers decreased six percent, while mobile visits grew 152 percent and tablet visits grew 225 percent.
- Industry research shows 58 percent of Americans have a smartphone and mobile devices already outsell personal computers two-to-one.
- A Pew Research survey of technology stakeholders indicates that, by 2020, the mobile device will be the primary connection tool to the internet.

The Texas.gov portal and many of the most popular applications were refreshed in fiscal 2013–14 to use responsive web design which ensures visitors from all types of devices (e.g., desktop, laptop, tablet, and mobile devices) encounter a viewing experience optimized for their device.

When a smartphone or tablet loads www.texas.gov, the portal is displayed in a single column for easy navigation, with large, descriptive icons that are easy to tap. The content is presented in a simple and straightforward manner. Most transactions that can be completed through the portal are conveniently available on mobile devices as well.

Many of the services offered on the mobile site, such as Driver License Renewal and Fund for Veterans Assistance donations, also feature mobile-friendly functionality giving Texans a seamless transition from the government portal to a government transaction.

Speed to Market

The Texas.gov program has developed a suite of configurable products to be used for common government online payment, including utility payments, ticket pay, fee/fine, licensing, etc. The TxPay product line delivers increased speed to market for many online payment needs of Texas government entities. These new services can be implemented through simplified configuration settings rather than custom applications developments.

Local governments and state agencies are using TxPay for their fees, fines, and licensing needs, including City of Helotes, City of Troy, the Texas Department of Agriculture, and the Texas Department of Public Safety.

Accessibility

The Texas.gov website is compliant with state and federal accessibility standards. Of the applications provided on Texas.gov, 99 percent are fully accessible. Texas.gov uses a template for new applications that is optimized for the many facets of accessibility that allow disabled users using assistive technology to access services.

CUSTOMER SERVICES

In the fiscal 2013–14 biennium, Texas.gov provided a wide range of services to meet a broad variety of customers' needs:

Custom Solutions

Some Texas.gov customers need custom solutions to provide online services to fulfill their mission. In these cases, Texas.gov uses a business case process to determine the requirements, cost and transaction fees necessary to implement the solution. For example, the Texas Department of Criminal Justice eCommDirect and Trust Fund application is a custom solution that allows family and friends of incarcerated offenders to deposit money to the offender's account or purchase commissary items for the offender.

The Texas Open Data Portal was another custom solution completed in the last biennium. This solution provides tools to help citizens and agencies analyze, visualize, and map public information.

Enhancements to Existing Applications

Other Texas.gov customers chose to enhance existing applications. For example, the Texas Workforce Commission wanted to upgrade their WorkInTexas.com application to be mobile-friendly. Texas.gov provided a responsive redesign of the job application site, which made it render quickly and appropriately on all mobile devices. Now 30 percent of those

using the WorkInTexas.com access it from a mobile device.

Similarly, the Department of Public Safety's applications for Concealed Handgun and Driver License Renewal have undergone modifications to meet legislatively mandated changes in privacy requirements.

New Applications in Development

The Texas Workforce Commission (TWC) knows that veterans need jobs and employers want to hire veterans. Since the final quarter of fiscal 2014, TWC has been developing a new portal called Texas—Wide Open for Veterans, which improves the ease with which veterans can find the services they need to move to Texas. The site will launch in early November 2015.

Expansion of Successful Services to All Texans

Texas.gov hosts and provides payment processing capabilities for the Texas Department of Motor Vehicles (TxDMV) online vehicle registration application. In 2014, access to that capability expanded. SB 1669, passed by the 83rd Legislature, required all counties to provide online access to vehicle registration. In collaboration with the TxDMV, Texas.gov provided training and expanded online payment capabilities for 60 additional counties. By January 2014 all counties provided vehicle registration services online.

Applications Transitioned

The Office of Court Administration (OCA) and the Comptroller of Public Accounts (CPA) both received legislative authority to fund and provide the eFiling and TxSmartBuy applications, respectively, that had been developed and operated by Texas.gov. For these two applications, Texas.gov originally developed the concepts, provided the investment to implement, assumed the risks of development, and trained users throughout the state to use the applications. During this biennium, Texas.gov provided technical, governance and contractual support to assist these agencies in successful transitions for both these applications to be hosted by the OCA and CPA, respectively.

Governance

The Texas.gov governance model supports DIR's oversight authority and provides ongoing opportunities for customers to guide responsible decision making. DIR works with the governance bodies and the state's private partner to make collaborative decisions regarding strategic direction and project prioritization.

This governance framework also supports a communication and decision-making platform that fosters agility and transparency in addressing complex technology decisions with multiple stakeholder perspectives.

National Recognition of Excellence

Texas.gov has been recognized nationally as a leading government website. Texas.gov received 13 national awards in 2013 and another 13 awards in 2014, including the following:

- 2014 Digital Government Best of the Web Finalist for Outstanding Portal (Fourth Place)
- 2014 Web Marketing Associations WebAward for Outstanding Website
- 2014 Center for Plain Language Public Sector Website
- 2014 Association of Marketing & Communication Professionals Government Website
- 2014 Internet Advertising Competition Best Government Integrated Ad
- 2013 Center for Digital Government Best of the Web Top Ten Finalists
- 2013 International Academy of Visual Arts Web Applications and Services
- 2013 Stevie Award Silver Customer Service Department of the Year

BENEFITS AND EFFICIENCY GAINS

The Texas.gov program solves a wide range of agency technology needs in ways that benefit citizens and government entities.

Benefits for Citizens

Citizens are increasingly finding the benefits of conducting their State of Texas business through Texas.gov, as the following graph of biennial growth rates for several high-volume online services indicates:

Transaction Growth
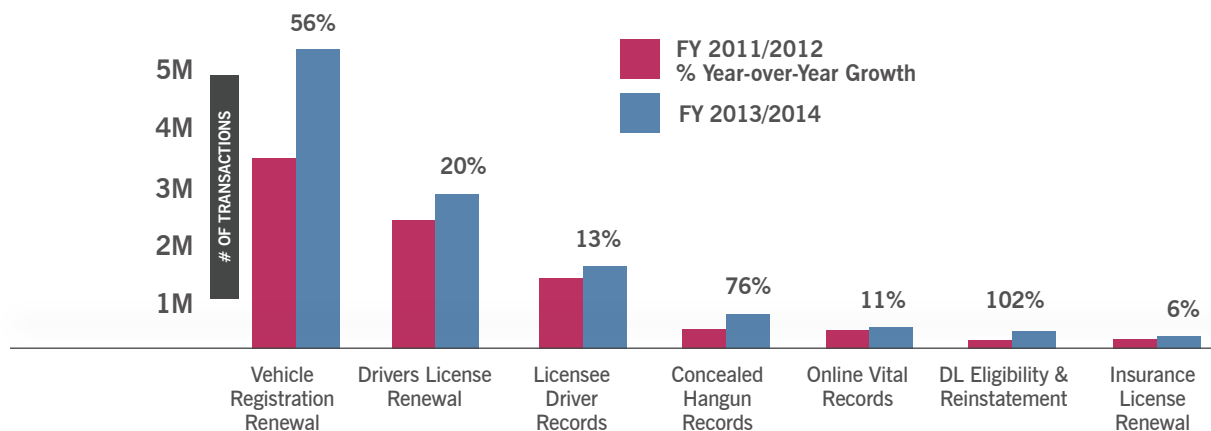
Citizen awareness has been increased by Texas.gov marketing efforts. The transaction rate growth depicted above is partly due to a successful marketing campaign focused on driver-related services. Overall, customer satisfaction is consistently around 90 percent and "word-of mouth" promotion continues to be significant.

The following case study illustrates how Texas.gov partnerships successful-
ly address citizen challenges with no impact on the state budget.

> **Case Study: TEXAS DEPARTMENT OF CRIMINAL JUSTICE (TDCJ)**
>
> The Texas.gov eCommDirect lets friends and family of an offender incarcerated in a TDCJ facility to deposit funds into a trust fund and to purchase commissary goods for the offender. This secure service offers online convenience and greater control of how the deposited funds are spent. Users can purchase up to $60 in commissary items for a qualified offender in a TDCJ facility every three months and make deposits into the incarcerated offender's trust fund account.
>
> Since the launch in October 2012, eCommDirect has securely processed more than 473,000 transactions and almost half of all eligible Texas offenders have received a commissary item or deposit via this service. Texas is the first state in the nation to offer the ability to shop the commissary and make a deposit to an offender's trust fund in one transaction.
>
> eCommDirect has helped TDCJ improve its service to offenders' families and friends by giving them greater control over and improved transparency of the funds they provide. The ability to combine both trust fund deposits and commissary purchases into a single transaction is more convenient and cost-effective for the users.

Benefits for State Agencies

Support for Existing Texas.gov Applications and Services

Texas.gov offers applications and services to over 300 state and local gov-
ernment entities, including all 254 counties. Ongoing development, main-
tenance, and support of these projects continue to be an important focus
for Texas.gov. The program also provides a 24/7 help desk for site-hosted
applications and services that allows constituents to conduct business with
the state at their convenience.

Development of New Applications

Some of the applications deployed through Texas.gov are major, custom
development efforts, which require considerable resources and years of
effort. For example, "DPS Direct" is a transformative effort of the De-
partment of Public Safety (DPS) processes and systems impacting such
programs as Vehicle Inspection, Private Security Bureau, Controlled Sub-
stance Prescription Pads, and others. Benefits of these efforts include
- increased resource efficiencies and scalability;
- improved customer experience and serviced delivery; and
- leveraged opportunities for savings and reduction in legacy IT costs.

Other applications are based on configurable frameworks that support
more rapid deployments. Each new customer receives training and support
to adjust the framework to match their circumstances.

Training and Development Opportunities for State Agencies

Texas.gov, using webinars, roundtables, videos, and case studies, address-

es key customer issues in ways that lead to real solutions. Recent presentations have been given on the following topics:

- "New" Risk Management and Communication Tool
- Increase Your Organizations' Agility with Service-Oriented Architecture
- Embracing Collaboration, Innovation, Ingenuity, and Agility to Achieve Results
- Social Media #TopTen Insights from Texas.gov

Many other Texas.gov applications have been deployed in past years that continue to offer sustained benefits to citizens and customer agencies. Due to Texas.gov's transaction-based, self-funded model, most of these valuable services are provided with limited capital and resource investments by the agencies.

Benefits to the State

The mission of Texas.gov is to provide portal and payment services for Texas state agencies and other governmental entities so that they can conduct business with their customers. Texas.gov offers a common infrastructure for online service delivery and payment processing, which enables state agencies to move their business applications online quickly in a secure, accessible, mobility-enabled environment. This allows their customers to conduct state business wherever and whenever they want.

Texas.gov processes more than two million transactions averaging over $120 million each month. Since its beginning in the year 2000, Texas.gov has had almost 220 million site visits and processed over 225 million financial transactions.

Increased adoption and national awards are indicators of the success of the Texas.gov program. Additionally, Texas.gov revenues allow the Texas.gov partnership to continue to invest in new projects that create or upgrade services for government entities. These new or improved services, guided by the governance of the Texas.gov program, simultaneously increase convenience for citizens and the ongoing contributions to state's General Revenue fund as discussed below. The following case study shows how Texas.gov partnerships successfully address complex technology challenges.

Case Study: OPEN DATA PORTAL PROJECT
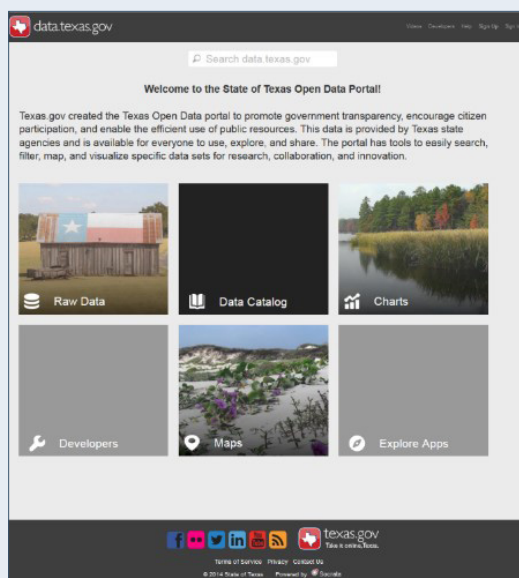
The Texas Department of Information Resources through its Texas.gov program implemented the Texas Open Data Portal which allows state agencies to post public data and reports online. This allows citizens, businesses and government entities to search for, locate and extract value from datasets uploaded by participating agencies. The Texas Open Data Portal provides a centralized location for Texas government data and reports and is provided at no charge to state agencies and the public.

Texas Open Data Portal is appropriate for State Government data and reports intended for a public audience. Datasets that are published in raw format can be cataloged, mapped, filtered, visualized, downloaded and combined with any other standardized dataset. Publishing open data reduces the cost of fulfilling Public Information Act Requests and helps agencies fulfill their missions by providing pertinent information to the public.

FINANCIAL SUMMARY

Texas.gov continues to provide significant revenue to the state's general revenue fund. Agencies, local governments, and citizens have processed over $32 billion through Texas.gov through fiscal 2014. The cumulative revenue deposited to the state's general revenue fund through fiscal 2014 exceeded $200 million. The state's revenue share for the most recent four-year period is shown below.

Texas.gov State Revenue Share, Fiscal 2011–2014

FY 2011	FY 2012	FY 2013	FY 2014
$22,736,572	$32,792,060	$34,910,152	$36,426,277

The following table shows the unaudited Texas.gov statement of operations for fiscal 2014. The statement details the revenue and expenditures associated with the TexasOnline Master Agreement as well as projects included in the Master Work Order. The consolidated amount represents the revenue and expenditures for all Texas.gov projects.

TexasOnline Statement of Operations, Fiscal 2014

ITEM	EXISTING PROJECTS	MASTER WORK ORDER	CONSOLIDATED
REVENUE	-	-	-
Transaction Revenue	$75,568,981	$10,305,553	$85,874,534
Service Revenue	$5,842,034	$8,911,133	$14,753,167
Total Revenue	$81,411,015	$19,216,686	$100,627,701
Revenue Budget through 8/31/2012	$74,911,395	$25,136,786	$100,048,181
Revenue Over (Under) Budget	$6,499,620	($5,920,100)	$579,520
EXPENDITURES	-	-	-
Operations Costs	$21,426,399	$4,961,2074	$26,387,606
Variable Cost	$17,272,607	$387,636	$17,660,243
State 40% / 20% Revenue Participation	$26,009,715	$3,794,237	$29,803,952
Depreciation	$2,651,454	$899,424	$3,550,880
Bad Debt Expense	$0	$0	$0
Loss on Discontinued Projects	$0	$444,808	$444,808
Total Expenditures	$67,360,175	$10,487,314	$77,847,489
Expenditure Budget through 8/31/2012	$63,475,713	$13,561,999	$77,037,712
Expenditure Over (Under) Budget	$3,884,462	($3,074,685)	$809,777
Net Cumulative Recovered (Unrecovered)	N/A	$46,550,176	$46,550,176
Investment in Operations	$14,050,840	$8,729,372	$22,780,212
Favorable (Unfavorable) Net Variance	$2,615,158	($2,845,415)	($230,257)

Source: Texas NICUSA LLC
Note: The unfavorable variance did not result in a net loss to the state, it represents funds that were redirected to the Comptroller's SmartBuy program, rather than through Texas.gov.

REPORT ON TELECOMMUNICATIONS PERFORMANCE

This report addresses Section 2054.055(b)(10) of the Texas Government Code, which requires the Texas Department of Information Resources (DIR) to "report on the progress of the plan for a state telecommunications network;" and Section 2054.055(b)(1) of the Texas Government Code, which requires DIR to "address the performance of the statewide telecommunications system and the centralized Capitol Complex Telephone System."

The statewide communications infrastructure is operated and managed by DIR to provide a wide variety of communications services including voice, video, and data, integrated voice response (IVR), wide area network, virtual private network, call center solutions, and Internet services. DIR supports the Texas Agency Network (TEX-AN), the statewide consolidated telecommunications system, as well as the Capitol Complex Telephone System (CCTS), that delivers voice and data communications support within the Capitol Complex in Austin, Texas. State agencies are required to use TEX-AN and CCTS unless DIR grants a waiver. Communications technology services are available to other government customers on a voluntary basis.

Table 1. Communications Technology Services Customers

NUMBER OF CUSTOMERS	FY 2013	FY 2014
State Agencies	136	137
Local Government	423	437
Education	276	310*
Other	6	6
TOTAL	**841**	**890**

* Education calculations include both K–12 and higher education. In fiscal 2014, there were 201 K–12 customers and 109 higher education customers.

PROGRESS

TEX-AN

TEX-AN consists of a portfolio of communications technology contracts with multiple service options that satisfies the state's broad public service and business requirements. The contracts offer competitive solutions for statewide, commercially available voice and data services, an enhanced network and security operations center, and service delivery functions that support end-to-end delivery and management of services to the state.

Key Benefits of TEX-AN Contracts:
- Competitive pricing
- Multi-vendor environment, which provides a broader service portfolio
- Service-level agreements for each vendor and each service including remediation of service issues
- Operational-level agreements for each vendor and each service
- Availability of emerging technologies

DIR has employed an automated service delivery system and service catalog that allows customers to easily shop by service category or vendor. A customer portal provides customers with transparent billing and service information, as well as the ability to analyze their communications services data including performance, usage, and account activity.

Network Enhancements

The DIR-managed Austin Metropolitan Area Network (AMAN), which serves state agency facilities throughout Austin, is being upgraded to a Next Generation 100 Gigabit Network in fiscal 2015. The network will provide enhanced bandwidth to increase capacity for voice, video, and data traffic. Internet capacity will also be enhanced to meet the demands of increasing Internet traffic among state agencies within the city. DIR continues to work with its vendor partners to migrate agencies' network circuits from aging technology to advanced multiprotocol label switching (MPLS) network technology.

Capitol Complex Telephone System

The Capitol Complex Telephone System manages 23,000 phones supporting 90 agencies in 48 buildings throughout the Capitol Complex. CCTS operations include help desk support, move, add, and change support, and telephone equipment supplies.

VoIP Platform for CCTS

In fiscal 2014, DIR transitioned the Public Utility Commission and other agencies in the Capitol Complex to the new VoIP (Voice over Internet Protocol) platform. Pilot projects for VoIP have started with other CCTS

agencies. The goal is to transition customers from existing traditional phone system technology to the new VoIP solution at the same or lower cost.

Unified Communications and Collaboration

The VoIP platform will enable Unified Communications and Collaboration (UCC) services for Capitol Complex customers. UCC allows users to transition seamlessly among email, instant messaging, voice, and video; as well as to integrate with collaboration software. The platform also provides the capacity for anywhere access from mobile devices.

Capitol Complex Telephone Directory

Published every March, the directory contains telephone listings of state offices and CCTS customers located in the Austin area and within the Capitol Complex. The directory is available to state agencies in print and online format.

Network and Security Operations Center (NSOC)

The NSOC staff provide network monitoring of state-managed and -operated data networks and collaborate with a vendor to provide security services to all state agencies and eligible state entities that utilize the state network. Advanced security services are available to agencies through an advanced cloud-based platform that provides Texas state agencies with 24/7 security monitoring, security incident alerts, an archive of incidents and individualized incident response plans. During fiscal 2014, DIR began work on a proof of concept for a Malware Detection System at the NSOC. This security tool is an enhancement to the state security program and will generate useful alerts of infected assets on the network.

PERFORMANCE

Capitol Complex Telephone System

CCTS customers consistently receive timely, superior service from CCTS operations staff who are committed to providing exceptional services. As shown in the tables that follow, DIR has met or exceeded CCTS performance targets set by the Legislative Budget Board (LBB).

Table 2. CCTS – LBB Service Objectives and Performance Measures

Item	FY 2013 Targeted	FY 2013 Actual	Variance	FY 2014 Targeted	FY 2014 Actual	Variance
Percentage of Customers Satisfied with CCTS	99.0%	100.0%	Exceeded	99.0%	96.3%	Met
Percentage of CCTS Complaints/Problems Resolved in 8 Working Hours or Less	97.0%	98.0%	Exceeded	97.0%	97.5%	Met
CCTS Trouble Tickets as a Percentage of Lines in Service	8.44%	3.0%	Exceeded	8.44%	2.0%	Exceeded

TEX-AN

Through this network, DIR provides statewide communications technology services to state agencies, institutions of higher education, public education, local government, and other publicly funded customers. DIR continues its efforts to meet all TEX-AN performance measure targets established by the LBB.

Table 3. TEX-AN – LBB Service Objectives and Performance Measures

Item	FY 2013 Targeted	FY 2013 Actual	Variance	FY 2014 Targeted	FY 2014 Actual	Variance
Percentage of Customers Satisfied with TEX-AN	96.0%	94.1%	Met	96.0%	91.6%	Met
Average Price per Intrastate Minute on TEX-AN	$0.05	$0.022	Exceeded	$0.05	$.023	Exceeded
Average Price per Interstate Minute on TEX-AN	$0.04	$0.023	Exceeded	$0.04	$.023	Exceeded
Average Price per Toll-Free Minute on TEX-AN	$0.04	$0.018	Exceeded	$0.04	$0.018	Exceeded
TEX-AN Trouble Tickets as a Percentage of Lines in Service	7.0%	1.77%	Exceeded	7.0%	1.98%	Exceeded
Average price of data service on TEX-AN	$841.50	$735.70	Exceeded	$841.50	$735.70	Exceeded

TEX-AN Annual Benchmarking

DIR engages an independent vendor to perform an annual benchmark of rates contained in the TEX-AN contracts. As part of the benchmarking research, DIR rates are compared with the pricing and service levels among both commercial and government contracts. DIR uses the information to conduct negotiations with vendors on the service elements that are deemed not competitive in terms of average price or service levels.

Telecommunications Customer Advisory Committee

DIR established an advisory committee representing telecommunications customers from a broad range of entities: state agencies, higher education, and local government. The committee provides a forum for customers to share their concerns and needs directly with DIR staff; and offers customers an opportunity to participate in DIR's statewide strategic planning.

REPORT ON PROJECT MANAGEMENT PRACTICES

This report addresses Section 2054.157(b) of the Texas Government Code, which requires the Texas Department of Information Resources (DIR) to report on state agencies' progress in developing and implementing project management practices

BACKGROUND

Recognizing the need and fulfilling legislative directives, DIR adopted an administrative rule (1 TAC 216) that establishes consistent statewide requirements for project management practices. This rule specifies minimum statewide requirements for agency management of all technology projects, and requires that agencies must establish an agency-wide project management policy, develop a project classification system, and base internal practices on accepted industry standards. This rule is in the process of being revised per rule review requirements.

Major information resources projects are required to use the Texas Project Delivery Framework, which establishes a consistent, statewide method for project selection, control and evaluation based on alignment with business objectives and goals.

PROGRESS

Agency progress towards developing and implementing project management practices is reported in the biennial Information Resources Deployment Review. The following observations are based on a statewide analysis of state agency responses in the two most recent (2011 and 2013) reviews.[1]

- Agency compliance with state requirements to implement agency-wide project management methodologies for technology projects remains essentially unchanged from 77 percent in 2011 to 79 percent in 2013.

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1   Starting in 2013, institutions of higher education are not required to submit IRDRs; therefore, to make comparisons between 2011 and 2013 valid, only responses from regular state agencies were counted.

- Agencies voluntarily using the Texas Project Delivery Framework for some or all non-major technology projects increased from 28 percent in 2011 to 38 percent in 2013.

- Although implementation of a project classification system by agencies improved moderately (from 41 percent in 2011 to 49 percent in 2013), difficulty with classifying information resources projects still exists. DIR has developed a sample Project Classification Method to assist agencies.

- Agencies continue to show improvement with implementing a methodology that integrates contract and project management practices. In 2013, 45 percent of agencies now focus specifically on blending these practices, compared to 38 percent in 2011.

STATUS OF PROJECT DELIVERY FRAMEWORK INITIATIVES

As part of a continual improvement process, the Texas Project Delivery Framework (Framework) is undergoing changes. DIR formed a multi-agency work group consisting of project management practitioners from state agencies to identify and implement changes that will streamline Framework templates and make them more useful to project managers. The following are examples of recent developments:

- A revised business case template that incorporates both agency and constituent benefits when return on investment (ROI) is calculated for a project, previous versions included only the agency benefits.
- A new monitoring report template that calculates earned value for a project.
- A new project plan template that eliminates redundancies and is more in alignment with project management standards and best practices.

These changes are in draft form and are being tested by the work group prior to release in 2015.

PROJECT DELIVERY TRENDS

The Quality Assurance Team Annual Report, released in December 2013, provides an overview of major information resource projects. Many of the observations made are applicable to all projects, regardless of the size:

- Agencies do not always provide a methodology to quantify costs and benefits associated with their projects.
- Agencies often underestimate scope and timelines.
- Agencies do not control project scope effectively, allowing scope expansions that cause project delays.

- More agencies are breaking larger projects into smaller, more manageable pieces using a phased approach. Of the 20 new projects reported in 2013, only three exceeded two years in estimated development time.

DIR INITIATIVES

Project Management Lite (PM Lite) is DIR's small-project management processes and toolset. PM Lite does not supersede the Texas Project Delivery Framework, instead it is used for small and non-major information resources projects.

The Program & Portfolio Management Office (PPMO) at DIR established PM Lite to facilitate consistent project delivery across its portfolio of projects and programs. PM Lite templates are available to all agencies for use on non-major information resource projects and any non-information resource project.

In an effort to further develop DIRs internal project management skills and expertise to support and assist state agencies, we are evaluating our own organization project management maturity. Experts have found a direct correlation between project management maturity, predictability of performance and reduction of cost. Increasing maturity often starts with the introduction of consistent methodologies and frameworks.

NEXT STEPS

In order to further the use of project management processes within state government, DIR will continue to do the following:

- Collaborate with agencies and the Framework Change Advisory Board to implement changes to the Framework.

- Provide DIR Statewide Project Delivery training using a variety of delivery methods such as webinars, YouTube videos, face-to-face presentations, and tailored training to meet agency-specific needs. Training will focus on sharing best practices for completing Framework deliverables and sharing lessons learned across different projects to assist agencies in improving project outcomes.

- Advocate, institute, and develop organizational project management best practices and capabilities to continue to improve statewide organizational project management maturity in project, program, and portfolio management.

APPENDIX A
REPORT ON IT FINANCIAL DATA AND GOVERNANCE

In 2013, the Legislature passed House Bill 3093 requiring DIR to evaluate IT financial data needed to comprehensively evaluate information resources technologies spending from an enterprise perspective, and to review best practices in information resources technologies governance, including private sector practices and lessons learned.

In order to understand current conditions and recommend future actions, DIR facilitated a working meeting with the Quality Assurance Team,[1] the Information Technology Council for Higher Education, and the Legislative Budget Board. The meeting was convened to discuss and consider opportunities to increase transparency and efficiency in IT statewide.

The group considered the importance and limitations of data and information available and opportunities for improvement. The group presented the following conclusions:

- Sufficient financial data is collected about IT budgets and expenditures, however, the data is stored in unrelated systems and is difficult to connect or use for purposes other than the purpose it was collected.
- There is sufficient enterprise monitoring for large state-funded IT projects through the Quality Assurance Team and Higher Education System Offices.
- State agencies and individual institutions monitor large and small projects that do not qualify for outside oversight.
- There is not a complete and detailed accounting of all IT projects statewide.
- Without centralized and more detailed financial systems, the state will continue to be required to produce ad hoc reports for specific projects to evaluate spending.

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1   The Quality Assurance Team is a three-member committee with representativews from the LBB, SAO, and DIR, whose function is to review and approve major information resources projects developed and paid for with state funds.

BACKGROUND

There is sufficient financial data collected about IT budgets and expenditures. The data currently collected is primarily used to support financial planning and decision making:

- Data collected includes funding requests and expenditures.
- Data reported allows for monitoring and reporting on project progress.
- Reporting provides transparency.

There are some limitations of the data.

- Data is self-reported.
- Data is not complete and does not consistently include the needed level of detail.
- Linking data across systems is difficult because of the manner in which it is collected and maintained.

The budget and expenditure data is primarily maintained by systems run by the LBB and the Comptroller's office. Table 1 shows the sources of IT financial data in Texas.

Table 1. Sources of IT Financial Data

Source	System of Record	Data Owner	Contents	Agency/ IHE
Legislative Appropriations Request	ABEST	Legislative Budget Board	Budget Requests	Both
Information Technology Detail (Biennial Operating Plan)	ABEST	Legislative Budget Board	Technology Budget Requests	Agency, Limited IHE
General Appropriations Act	ABEST	Legislative Budget Board	Approved Budgets	Agency, Limited IHE
USAS and CAPPS	USAS/CAPPS	Comptroller	Statewide accounting data, revenues and expenditures	Agency, Limited IHE
Texas Transparency	USAS/CAPPS	Comptroller	Expenditure reports	Agency, Limited IHE
Statewide IT Contracts	DIR Data Warehouse, Open Data Portal	DIR	Contract purchases by agency and vendor	Both
Contracts Database	LBB database and Web portal	Legislative Budget Board	State agencies must report all contracts, invitations to bid and comparable requests, and amendments to the LBB using the State Contracts application.	Agency
EDUCAUSE	Core Data Survey repository	Non-profit association focused on IHE IT	Colleges/universities nationwide voluntarily use the Core Data Service to report data on IT staffing, financials, and services	IHE
Annual Financial Reports	PDF of text	Maintained by originating agency/IHE	Operations and financial condition of an organization	Both
Major IR Project planning documents (Project Framework)	PDF of text	Quality Assurance Team administered by the LBB		Agency
Government Effectiveness and Efficiency Report	PDF of text	Legislative Budget Board		Both

IT GOVERNANCE BEST PRACTICES

A well-defined governance process should define decision making responsibilities and accountabilities based on expertise and authority. It should define a processes for evaluating new project investments on business value and risk, and support consistently tracking and evaluating the portfolio of active projects.

There is sufficient information available on IT governance best practices through industry experts:

- **Books and Research** – IT Governance by Peter Weill Gartner and information from research organizations like Gartner, InfoTech, Forrester, and others.
- **Professional Organizations** – Groups like Control Objectives for Information and Related Technologies (COBITt), Information Technology Infrastructure Library (ITIL), and Project Management Institute (PMI)
- **Associations** – National Association of State Chief Information

Officers (NASCIO) and National Association of State Legislatures (NCSL).

Still, project overruns occur in both private and public sector projects. Common factors affecting project success:

- Unclear project goals
- Insufficient planning and requirements analysis
- Overly complex projects
- Weak ownership and governance

Both centralized and decentralized government structures have achieved different levels of success relating to transparency and governance:

- Since 2009, the Georgia Technology Authority has managed much of the state's IT. Governance is easier in a more centralized environment. In Georgia, the Enterprise Governance and Planning division provides a number of services to state agencies to enable them to plan, manage, and deliver technology services to their constituents. The division is involved in managing the state's portfolio of technology projects to ensure they meet established goals and are completed on schedule and within budget

- In 2008, the California Department of Food and Agriculture was recognized for its IT governance and project management. Within one large government agency, seven divisions were working independently and IT management was not structured in a way to take advantage of efficiencies. The agency recognized a need for a repeatable and sustainable process to approve and manage its IT projects. This process needed to align allocation of resources with agency goals. The structure of the new governance process has two parts, an IT Governance Council and a specific Project & Portfolio Management protocol. These two parts bring system and transparency to IT projects, allowing business leaders to make decisions on resource allocation.

Even with sufficient governance examples and expertise available, there is concern that the governance information is not always subjective. Also, it is not easily scalable and customizable. Simple, agile tools are preferred. Each organization should evaluate the best fit for its business processes and goals. Agencies will have to strike a balance between agility and compliance.

CONCLUSION

In order to address challenges, Texas should consider a more consolidated approach to data management and project oversight. Technology evolves quickly, and any changes should be flexible and encourage innovation.

DIR will continue to seek opportunities to collaborate, and to provide guidance and assistance to organizations with various levels of IT maturity.

SUMMARY OF INTERNET-BASED TRAINING

This section addresses Section 2054.055(b)(8) of the Texas Government Code, which requires the Texas Department of Information Resources (DIR) to provide a summary of the amount and use of Internet-based training.

Agency responses to the 2013 Information Resources Deployment Review provide information relating to their use of internet-based learning and training.
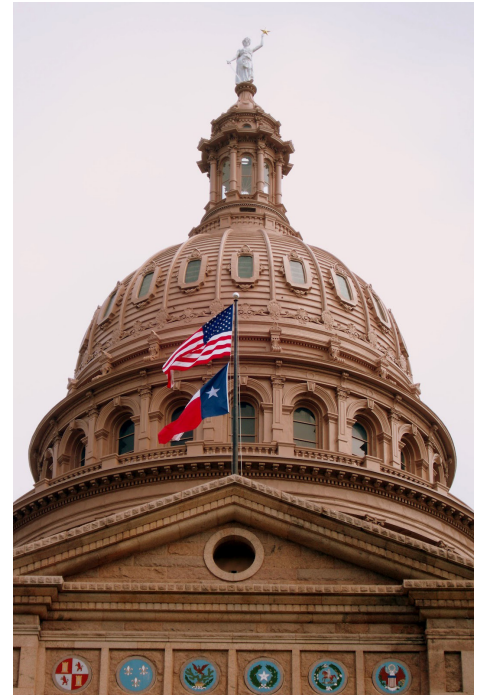
Figure 1. Types of Technology Used for Internet-Based Training

Percentages reflect a multiple selection option from 80 total agency responses.

What types of technology are used in training programs provided by the agency?

Technology	Percentage
Live broadcast via webinar	34%
Recording available on agency's website	33%
Recording available on CD or DVD	28%
Live teleconference	24%
Other (e.g. slide presentations, online training modules, computer simulations)	15%
Recording available on YouTube	14%
Recording available via podcasting	4%
None	25%

Figure 2. Personnel Training and Learning Toolsets

Percentages reflect a multiple selection option from 80 total agency responses.

Does the agency utilize IT-based personnel training/learning toolsets?

Online training presentation, third-party	49%
Employee training/certification tracking	45%
Online training presentation, in-house	40%
Curriculum development and content management	24%
Other (onsite classroom training, separate web portals, handbooks)	5%
None	28%
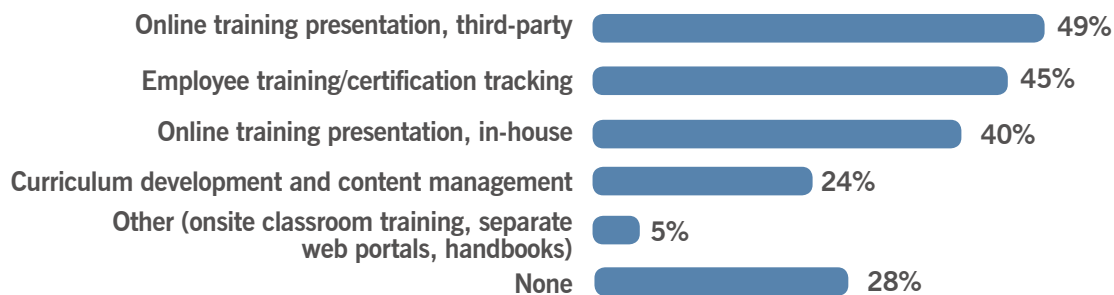
Figure 3. Learning Management Systems

Percentages based on 77 complete agency responses.

Does the agency have a learning management system?

Yes 38%

No 62%
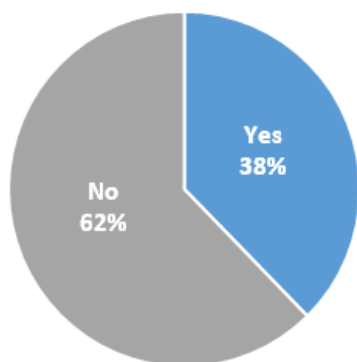
Figure 4. Integration of Learning Management Systems with Current Systems

Percentages based on affirmative replies from 16 agencies. Percentages are rounded.

Does the agency's learning management system integrate with a current human resources management (HRM) or enterprise resource planning (ERP) system?

A separate system integrated with HRM or ERP system	A component of HRM or ERP system	A separate stand-alone system, not integrated with a HRM or ERP system
13%	44%	44%
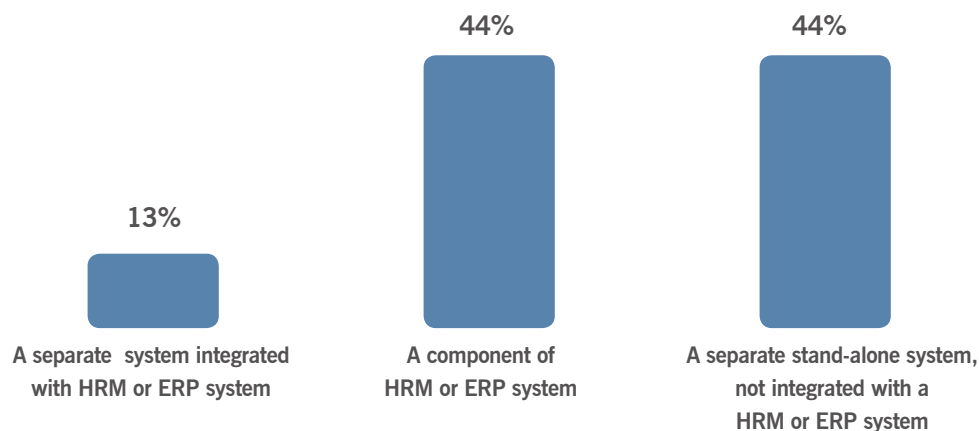
EXAMPLES OF AGENCY E-LEARNING

The **Board of Nursing** offers education through a third-party that is available on Texas.gov.

The **Department of Aging and Disability Services** utilizes web-based training and webinars to train large number of external and internal constituents. Examples of the 13 web-based training programs provided by DADS include the Family Councils and the Licensed Vocational Nurse On-Call Pilot programs. Classroom training is reserved for courses that require more interaction and in-depth understanding of the topic.

The **Department of State Health Services** uses a national learning management system TRAIN that imports training completions into the state Centralized Accounting Payroll/Personal System (CAPPS).

The **Office of the Attorney General** uses e-learning to deliver training to its employees throughout the state in more than 100 offices. The Online Training Module system delivers mandatory training and incorporates notification and compliance. The OAG e-learning applications have produced an average compliance rate for mandatory training of 99 percent.

The **State Office of Risk Management**'s training system is used for client agencies as well as SORM employees. The agency's computer-based training experiences high usage rates by extending availability of some of the training to the general public.

The **Texas Department of Public Safety** has deployed Saba Learning Management system to training customer service representatives in the Driver License Division.

The **Texas Workforce Commission** partners with LearnSmart to provide some of the web-based training available to employees, particularly on soft-skills topics and computer end-user topics.

ACKNOWLEGDMENTS

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